REPORT ON AMBIENT AIR SURVEY IN THE WELLAND AREA

ARB - TDA REPORT No. 62 - 79

MAY 1978

Ontario Ministry of the Environment

The Honourable
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Minister

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Deputy Minister

AIR RESOURCES BRANCH

Technology Development and Appraisal Section

Monitoring and Instrumentation Development Unit

ARB - TDA Report No. 62 - 79

Report on an Ambient Air Survey in the Welland Area

May 1978

Ontario Ministry of
the Environment
880 Bay Street
Toronto, Ontario
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01 Summary

An ambient air monitoring survey was undertaken by the Monitoring and Instrumentation Development Unit of the Air Resources Branch in the Welland area during the last two weeks of May, 1978. The main purpose of this survey was to monitor gaseous vinyl chloride monomer (VCM) in the vicinity of the B.F. Goodrich Chemicals of Canada Ltd. polyvinyl chloride plant located approximately 10 km northeast of Welland. The secondary purpose of this survey was to monitor total suspended particulate (TSP) matter in the vicinity of Union Carbide and Stelco companies located just to the south of Welland.

Very little precipitation was associated with the two frontal systems which moved through this locale during the 6 monitoring days of this survey. Ambient air monitoring was carried out under clear weather conditions and predominantly light northerly winds.

From the 249 instantaneous acquired VCM samples, the overall average ground level concentration (glc) was 0.045 ppm with associated standard deviation 0.097 ppm. As noted by the relatively large standard deviation, considerable variation in VCM glc was detected in this area; less than 0.001 ppm (minimum detectable concentration) to 0.67 ppm. Approximately 65% of these VCM samples depicted glc less than 0.001 ppm, whereas approximately 6% depicted glc in excess of 0.200 ppm. Significant VCM

glc were only found within 1 km of the suspected source - B.F. Goodrich.

On May 24th, between 11:53 and 12:26, four significant VCM glc's were detected. It was shown from this data that the universal sample mean was between 0.21 ppm VCM and 0.49 ppm VCM (i.e., in excess of the Guideline) at the 98% confidence level.

Through wind analyses and relevant source descriptions in this locale, the B.F. Goodrich plant was ascertained as being the only possible source of VCM.

Low concentrations of total hydrocarbons (THC) were detected throughout this survey in the vicinity of B.F. Goodrich. The overall average THC glc was 2.31 ppm with associated standard deviation 0.83 ppm.

Similarly, low concentrations of ozone (O_3) were detected in the vicinity of B.F. Goodrich. The overall average O_3 glc was 0.033 ppm with associated standard deviation 0.025 ppm.

The hi-volume sampler site was located at 337 Alberta Street, downwind of the Stelco and Union Carbide complexes, Welland. However during this survey and as noted by the West Central Region, Union Carbide was inoperative due to a labour strike.

High TSP mass loadings were recorded during this survey. Six of the seven exposed glass fibre filters depicted ambient air concentrations of TSP in excess of

the 24 hour Criterion; 120 ug/m^3. The overall average TSP concentration was 165 ug/m^3 with associated standard deviation 29 ug/m^3. The relatively low standard deviation (18%) denoted consistent high TSP concentrations in this area.

Significant ambient air concentrations of silica (Si) and alumina (Al) were also detected at 337 Alberta Street. From the 8 exposed Delbag-Microsorban polystyrene fibre filters, the overall average concentrations of Si and Al were 12.6 ug/m^3 (8% of the average TSP concentration) and 0.76 ug/m^3 (0.5% of the average TSP concentration) respectively. The maximum 24-hour average concentrations of Si and Al were 42 ug/m^3 and 1.32 ug/m^3 respectively.

Additional analyses were performed on the 7 exposed glass fibre filters in order to ascertain polycyclic aromatic hydrocarbon (PAH) ambient air concentrations in this area. Low, background levels of PAH were detected. This PAH group included the following hydrocarbons: fluoranthene, perylene, benzo(k)fluoranthene (BkF), benzo(a)pyrene (BaP) and benzo (ghi)perylene (B(ghi)P).

02 Introduction

The Monitoring Instrumentation and Development Unit of the Air Resources Branch conducted an ambient air pollution survey in the Niagara Peninsula, near the city of Welland, during the period of May 15 to May 25, 1978. This survey was conducted as per the request of the West-Central Region to investigate the hydrocarbon and vinyl chloride monomer (VCM) ambient air concentration, in the vicinity of the B.F. Goodrich Chemicals of Canada Lt. poly-vinyl chloride (PVC) plant and to establish total suspended particulate (TSP) mass concentrations in the vicinity of Union Carbide and Stelco companies.

03 Source Description

The B.F. Goodrich PVC plant is located on the North-East corner of the Hwy #63 and Hwy #70 junction, approximately 10 km NE of Welland. The area of land directly east and north of the G.F. Goodrich property is occupied by the Cyanamid Co. Ltd. Lying south and west of the B.F. Goodrich PVC plant is mainly farmland. No unusual geological features exist in the surrounding area that would affect the wind dynamics, as the area is level and open. Since emissions from the B.F. Goodrich PVC plant originate from various locations (process equipment) within the plant, all monitoring sites were referenced to the 40 metre water tower on the west side of the plant property (Reference to Map #1 - UTM - military coordinates; 06487 - 47696).

The B.F. Goodrich plant produces PVC and its resins by the polymerization of the VCM. The major VCM losses to the atmosphere are from reactor opening losses, emergency venting, dryer exhausts, blowdown tanks, building air change fans, blend tanks, silo fluidization, and recovery system venting. Detailed information regarding production of PVC and the impact of VCM in the environment can be obtained from the Ministry report "Vinyl Chloride as an Airborne Hazardous Contaminant 1", Oct., 1974, (ARB-TDA-01-74).

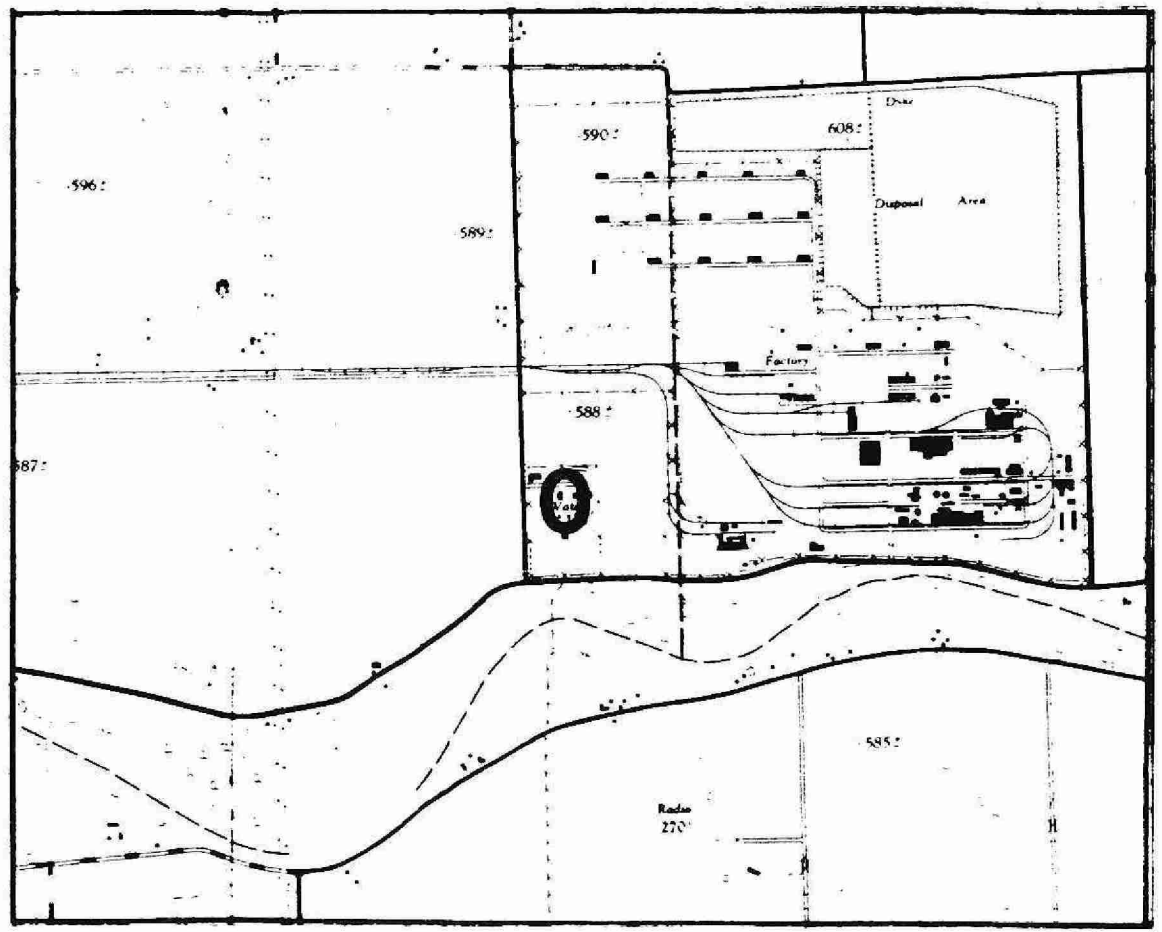
It should be noted that the B.F. Goodrich PVC plant is the only source of VCM and of chlorinated hydrocarbons in this area.

Map #1

WELLAND SURVEY - 1978

SOURCE

B.F. GOODRICH



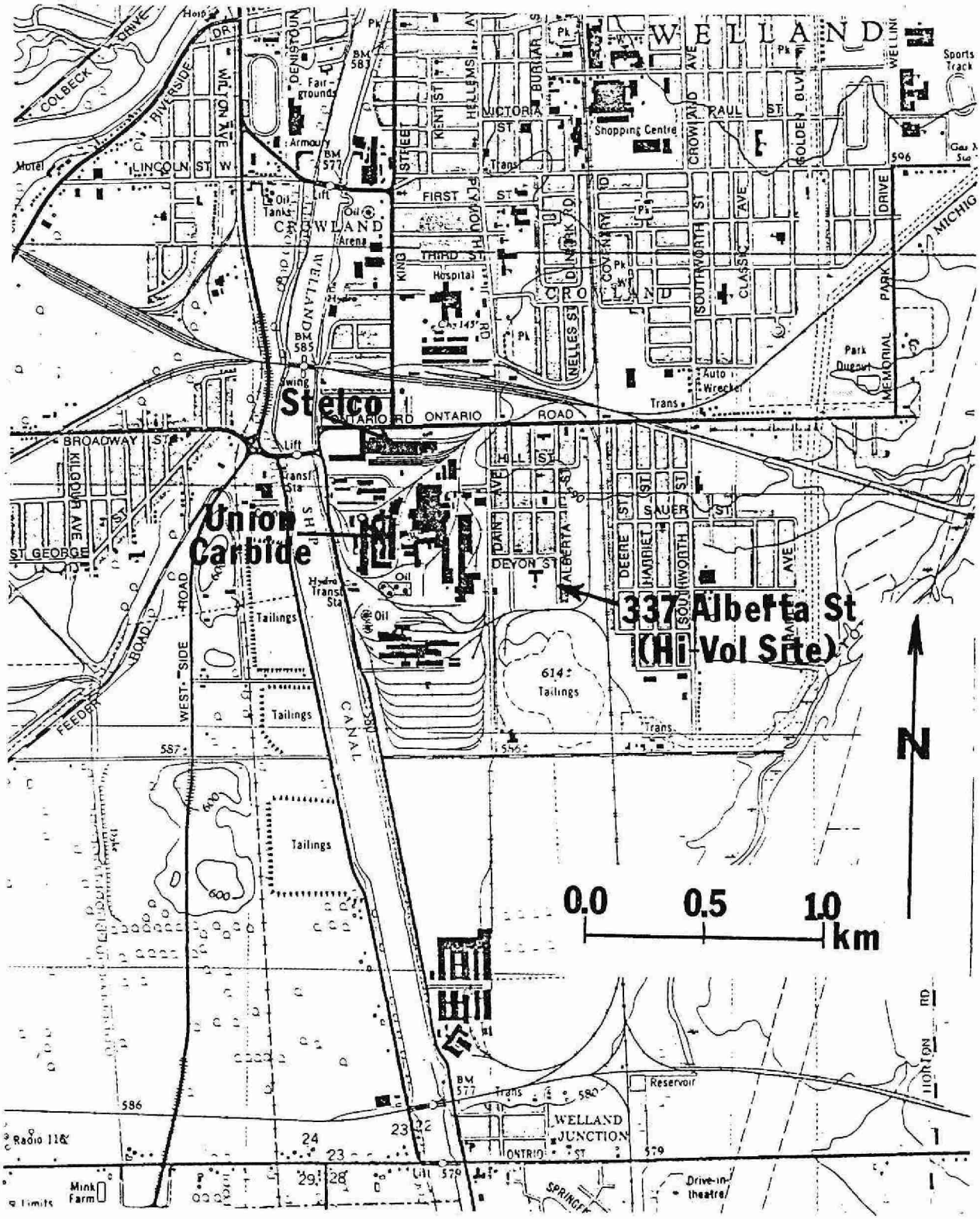
Both Stelco and Union Carbide mills are located in the major industrial complex, in the south section of Welland. Stelco fabricates "mannenesman" steel pipes whereas Union Carbide manufactures a variety of carbon and graphite products. Refer to Map #2, page 8.

Map #2

WELLAND SURVEY - 1978

SOURCES

UNION CARBIDE & STELCO



04 Survey Technique

One mobile air monitoring (MAM) unit, a 1975 GMC Transmode, was utilized to monitor the emissions from the B.F. Goodrich PVC plant. The MAM unit had permanently installed analyzers for monitoring sulfur dioxide (SO_2), carbon monoxide (CO), ozone (O_3), hydrogen sulfide (H_2S), total hydrocarbons (THC), methane (CH_4), and oxides of nitrogen (NO_x). A gas chromatograph calibrated for the detection of VCM was utilized as well. Instruments to collect meteorological data (wind speed, wind direction, barometric pressure, temperature, relative humidity and solar radiation) were also incorporated into the system.

The unit is equipped with automated data acquisition system (Hewlett Packard 9830A mini-computer system) and on board electric generators (twin Onan 6 KW). Automated, independent and continuous monitoring capabilities were a major feature of this unit. The HP 9830A mini-computer system performed initial data analyses in the field (re: accuracy and validity) but the final data reduction and analyses was carried out by a larger system located within the Air Resources Branch at 880 Bay Street, Toronto.

Following an assessment of wind direction and wind speed, the approximate locations of maximum ground level concentration (glc) impingement zones were found and ambient air monitoring was initiated within these areas. Air quality was continuously monitored for at least one hour at each location.

05 Monitoring Technique

(i) Sample Collection

The ambient air samples were taken at a constant flow rate (approximately 0.2 m^3/min) by a probe located on the van and whose orifice was located approximately 5 m above ground level. Air samples entered a manifold from which a short teflon sampling line was connected to each analytical instrument. This arrangement ensured little or no sample degradation, minimal response time, and minimal sample contamination due to ground level sources (e.g., entrained soil, vehicular traffic, etc.).

(ii) Instrumentation - analyzers

The instrumentation associated with the G.M.C. Transmode unit is presented in Table #1 on page 13.

(iii) Instrumentation - G.C.

The analysis of VCM in ambient air was performed by a Hewlett-Packard Gas Chromatograph (HP 5830A) and microprocessing unit (HP 18850A G.C. terminal). Operating parameters were monitored automatically by the microprocessing unit once the programme was entered.

With respect to the G.C., the column consisted of 6 ft. of SS-tubing, 1/8" O.D., packed with Phenyl-isocyanate/Porasil C, 80-100 mesh, operating at a temperature of 0°C. Nitrogen flowing at 30 ml/min

was used as the carrier gas. A sampling loop of 5 ml volume was used for sample collection. The G.C. used a flame ionization detector (F.I.D.) to monitor VCM. No known interferences were observed under these conditions, thus quantitative analysis could be performed. Laboratory testing indicated that an accuracy of better than ± 10% could be achieved.

The G.C. was calibrated twice daily with 0.5 ppm VCM standard in ultra zero air. These standards were contained in refrigerated multi-layer aluminized polyester (Mylar) bags.

(iv) Vinyl Chloride Monomer Sample Collection Methods:

Two methods were employed to collect ambient air VCM samples for G.C. analysis. One method, involved taking a 5 ml instantaneous sample from the MAM's primary manifold and automatically injecting this sample into the G.C. This instantaneous sampling indicated what magnitude of VCM was contained in the ambient air. Since the emissions that produce periods of high VCM concentrations are of a discontinuous nature (due to the batch process),this method indicated when large losses of VCM to the atmosphere were occurring When G.C. analysis indicated significant ambient air levels of VCM, the frequency of instantaneous sampling was increased to every 11½ minutes and the second method of sample collection was initiated.

Normally an instantaneous sample was analyzed every ½ hour.

The second method used aluminized polyester (Mylar) multi-layer bags in conjunction with battery powered personal sampling pumps to collect and hold the ambient air sample. The bags had a useful volume of 20 litres. The flowrate of the pump was not critical. All that was required was a significant size sample to be collected over a ½ hour period. This technique required only the sampling time and location be recorded.

(v) Meteorological Analyses:

Meteorological conditions were monitored on a continuous basis by the instrumentation associated with the GMC mobile air monitoring (MAM) unit (REF Table #1, page 13). Complementing this microscale monitoring, macroscale information regarding air mass movements and prognostics was obtained from Environment Canada, Welland.

(vi) Calibration - Analyzers:

Analyzers and sources were calibrated before the survey. During the survey, the analyzers' calibration was checked at least once every day using the sources and built-in electronic circuitry. All monitors were found to be extremely stable and the calibration remained within the prescribed limits throughout the duration of the survey. Following completion of the survey, all instruments were rechecked in the laboratory and all calibration statistics were found to be satisfactory.

TABLE 1: INSTRUMENTATION - GMC

Instrument	Manufacturer	Analytical Technique	Maximum Sensitivity (Full Scale)
H_2S Source	Hartmann & Braun (H&B Prüfgasgenerator)	N/A	N/A
H_2S Analyzer	H&B Picos	electrochemical	0.05 ppm
SO_2 Source	H&B Prüfgasgenerator	N/A	N/A
SO_2 Analyzer	H&B Picoflux 2	conductometric	0.3 ppm
O_3 Analyzer/Source	Bendix 8002	chemiluminescent	0.05 ppm
NO_x, NO_2, NO Analyzer	Bendix 8101-B	chemiluminescent	0.5 ppm
CO Analyzer	H&B Uras 2T	Infrared Absorption	50 ppm
THC, CH_4, THC-CH_4 Analyzer	Ingenieur - Produktions-Gruppe München (IPM) RS-5	Dual flame ionization detector	50 ppm THC (as CH_4)
Hg Analyzer	Scintrex HGP-2	Ultra-violet Absorption	200 ng/m^3
CO, THC, THC-CH_4, CH_4 source	Matheson	compressed gas	N/A
Hydrocarbons chlorinated hydrocarbons, PAN, etc. Analyzer	Hewlett & Packard Gas Chromatograph 5830A System	Retention time as measured by electron capture, thermal conductivity, or flame ionization detectors	As set by calibration procedure.

Instrument	Manufacturer	Scale
**Wind speed	Lambrecht gmBH	km/hr
**Wind direction	Lambrecht gmBH	degrees
Temperature	Weather Measure (WM) T621	^oC
Relative humidity	WM-HM-111P	percent
Barometric pressure	WM-BM70-B242	millibars
Solar radiation	WM Star Pyranometer	watts/cm^2

** These wind indicators are located on top of a 10-metre retractable mast.

06 Monitoring Site Locations

The ambient air monitoring sites are shown on Map # 3 , page 15, and are described in Table # 2 , page 16. The sites are presented in chronological order.

All monitoring sites were referenced to the main stack of B.F. Goodrich (UTM co-ordinates; 06487 - 47696) located at the west side of the PVC plant.

The hi-volume sampler site is shown in Map # 4 , page 17.

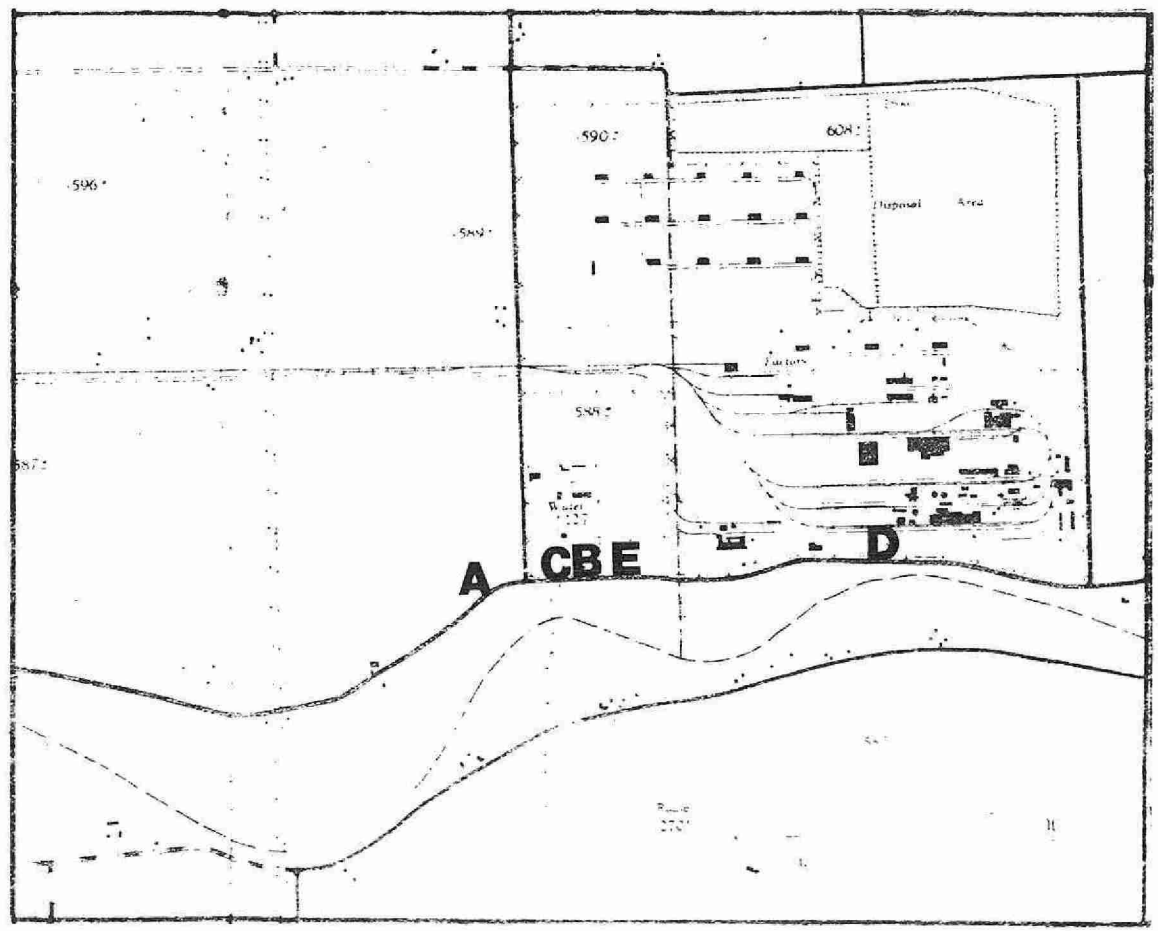
Map #3

WELLAND SURVEY - 1978

B.F. GOODRICH

AMBIENT AIR MONITORING

SITE LOCATIONS



0 1 2 km

TABLE # 2

MOBILE AIR MONITORING SITES

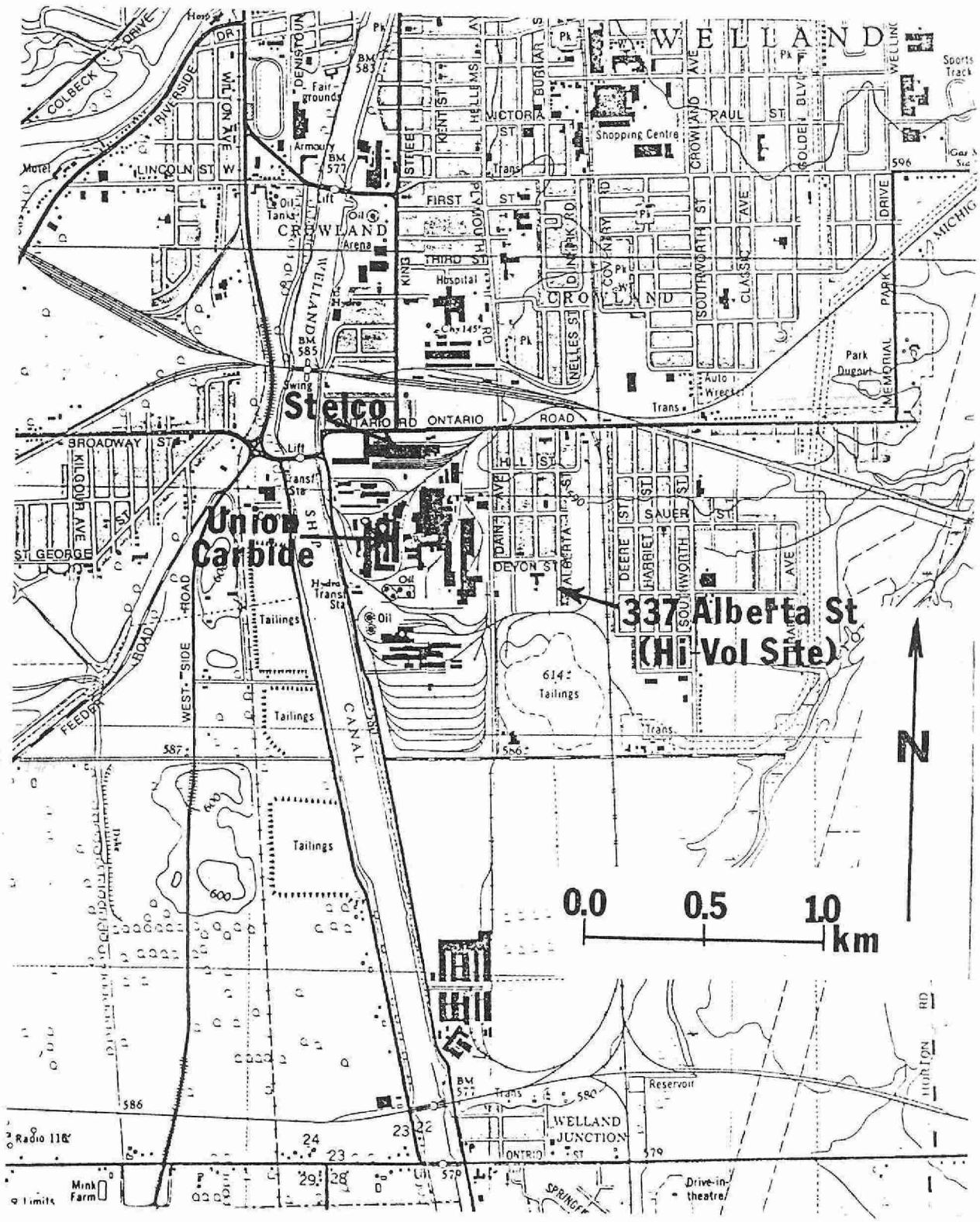
all monitoring sites were logged as
Welland # X

Site	Map Indentification	Location and UTM Coordinates	Distance (km)	Bearing (degrees)	Date
1	A	Hwy #63 06485 - 47671	0.35	210	May 15
2	A	Hwy #63 06485 - 47671	0.35	210	May 16
3	B	Hwy #63 06488 - 47671	0.26	170	May 16
4	C	Hwy #63 06487 - 47671	0.25	180	May 17
5	B	Hwy #63 06488 - 47671	0.26	170	May 17
Met Data Only	D	Hwy #63 06498 - 47671	1.15	100	May 18
Met Data Only	D	Hwy #63 06498 - 47671	1.15	100	May 19
6	D	Hwy #63 06498 - 47671	1.15	100	May 23
7	D	Hwy #63 06498 - 47671	1.15	100	May 23
8	D	Hwy #63 06498 - 47671	1.15	100	May 23
9	A	Hwy #63 06485 - 47671	0.35	210	May 24
10	E	Hwy #63 06489 - 47671	0.27	160	May 25
11	E	Hwy #63 06489 - 47671	0.27	160	May 25
12 (Met Data Only)	E	Hwy #63 06489 - 47671	0.27	160	May 25

Map #4

WELLAND SURVEY - 1978

HI-VOLUME SAMPLERS; SITE LOCATION



07 Results

Definition of Terms:

Scanning Time: Time interval for averaging and data logging of instantaneous interrogations by the Data Acquisition System

Time: Time of first and final scans used to determine running averages

Number of Readings: Number of Scans

MAM: Mobile Air Monitoring

All statistical values are based on cumulative averages of instantaneous interrogations of the analytical instruments and all results are expressed in parts per million (ppm). An example of the processed data format incorporated in the Welland survey is presented in Table 3, page 19.

TABLE # 3

Processed Data Format

(Further Analyses are Presented at the end of this report)

WELLAND #10

DATE: MAY 25 1978
SCAN TIME: 150 SEC
AVERAGING TIME: 30 MIN
LOCATION: S.E. OF B.F.GOODRICH(06488-47671);0.28KM & 160DGS/SOURCE

TIME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	OZONE BAROMETER
12:02----12:32	2.8E+00 8.0E-02 5	1.2E+00 34 305	1.6E+00 0	7.5E-02 997
12:07----12:37	2.8E+00 8.1E-02 5	1.2E+00 35 306	1.6E+00 0	7.5E-02 997
12:12----12:42	2.8E+00 8.1E-02 6	1.2E+00 35 313	1.7E+00 0	7.6E-02 997
12:17----12:47	2.8E+00 8.1E-02 7	1.2E+00 35 326	1.7E+00 0	7.8E-02 997
12:22----12:52	2.8E+00 8.2E-02 8	1.2E+00 35 326	1.7E+00 0	8.0E-02 997

STATISTICS

NUMBER OF READINGS 20

POLLUTANT	MINIMUM VALUE	MAXIMUM VALUE	ARITHMETIC MEAN	STANDARD DEVIATION	GEOMETRIC MEAN	GEOMETRIC STD. DEV.
THC	2.65E+00	3.50E+00	2.83E+00	1.87E-01	2.83E+00	1.06E+00
THC-CH4	1.12E+00	1.49E+00	1.23E+00	9.01E-02	1.23E+00	1.07E+00
CH4	1.50E+00	1.73E+00	1.65E+00	7.80E-02	1.65E+00	1.05E+00
OZONE	6.85E-02	9.09E-02	7.79E-02	5.95E-03	7.77E-02	1.08E+00
SOLAR RAD	7.96E-02	8.48E-02	8.11E-02	1.31E-03	8.11E-02	1.02E+00
TEMP	33	35	35	1		
HUMIDITY	0	0	0	0	0	1
BAROMETER	997	997	997	0	997	1
WIND SPEED	0	13	7	3	6	2

08 Discussion

A nine day dry spell was experienced throughout southwestern Ontario during the last part of May, 1978. Although frontal systems moved through the Welland area on May 15 and on May 20th, very little precipitation was associated with either of these systems. Since the majority of the ambient air monitoring at the points of impingement was conducted during the afternoons, clear and sunny atmospheric conditions, which favoured dispersion, were prevalent. Diurnal heating was the major meteorological phenomena that supported dispersion whereas subsidence and nocturnal inversions contributed to appreciable ground level concentrations (glc) of air-borne pollutants.

The winds were generally northwesterly and light (velocities usually less than 10 km/hr).

As mentioned in Section 04, Survey Technique, analyzers for monitoring SO_2, CO, O_3, H_2S, THC, NO_x and VCM were installed in the MAM Unit. However, only THC, O_3, and VCM will be presented in this discussion since it was determined that ambient air concentrations of H_2S, SO_2 and CO indicated only background levels. In addition, the NO_x analyzer was inoperative throughout this survey.

The following Standards (Guidelines), based on a 30-minute average concentration of gaseous pollutants as measured at points of impingement and as set out in Schedule 1, Regulation 15 of the Ontario Environmental

Protection Act, will be discussed/compared in the ensuing discussion.

Pollutant	Standard*
O_3	0.100 ppm
VCM	0.2 ppm (Guideline)
THC	**

* Conversion from ug/m^3 to ppm was made under the following conditions; temperature: 298°K (25°C); atmospheric pressure: 101.4 kPa

** At this time of writing, there exists no Standard nor Criteria for total hydrocarbons

Monitoring was carried out during 6 days between May 15th and May 25th. Over 98 hours of routinely monitored ambient air data were acquired at the 11 monitoring sites comprising this survey.

Vinyl Chloride Monomer - VCM

VCM is a chlorinated olefin hydrocarbon monomer which is found in the gas phase at ambient temperatures and pressures. Currently 95% of all VCM atmospheric emissions are believed to emanate from polyvinyl chloride (PVC) plants (Ontario Ministry of the Environment Report ARB-TDA 01-74, page 12). PVC contains residual entrapped VCM in the ppm range. This entrapped concentration is dependent upon the PVC production process and the VCM may be liberated in the presence of high temperatures during fabrication.

Although the atmospheric reaction rate is slower than with other hydrocarbons known to be in the atmosphere, VCM does undergo some change in the presence

of nitrogen oxides and solar radiation. VCM is thought to indirectly contribute to the buildup of ozone. However, VCM in unpolluted air appears to be stable.

VCM is distributed into the atmosphere surrounding the emission source in patterns that depend on the plant production,loading, the nature of the plant, geographic area and the ambient meteorological conditions. It has been theoretically shown that under slightly stable meteorological conditions (wind velocities $\simeq$ 9 km/hr), using diffusion modelling for various model plants, the maximum glc of VCM occurs around 0.25 km from the source and the glc fallsrapidly with farther downwind distances (EPA draft document on VCM - March 1975, Figure 11.1).

It should be noted that the production of PVC is a batch process and in lieu of other trace pollutants emitted from the suspected source, the ascertaining of maximum ambient air glc of VCM and the location of impingement zones was a major concern during this survey.

Two hundred and forty-nine instantaneous samples of VCM were acquired and analyzed during this survey, (see Section 05-IV, Monitoring Technique). Monitoring of VCM was carried out during every monitoring period (MP) of the survey and due to the discontinuous nature of the plant production and sample analysis, the glc of VCM were found to vary considerably. Samples analyzed ranged from below the detectable limit of 0.001 ppm to a maximum glc of 0.67 ppm.

In calculating the mean concentration value for this data, concentrations less than 0.001 ppm were arbitrarily assigned the value 0.0005 ppm; one-half the minimal detectable limit. Following this hypothesis, the overall average of the 249 instantaneous glc's of VCM was found to be 0.045 ppm with an associated standard deviation 0.097 ppm (see data summary table # 11 on page 37).

From the data summary table on page 37 , it will be noted that approximately two-thirds of the VCM instantaneous glc data registered values less than 0.001 ppm; in addition 16% and 6% of the analyzed VCM data depicted glc in excess of 0.100 ppm and 0.200 ppm respectively.

On May 17th and 24th, significant glc of VCM were detected. Approximately 12% (15/119) of the acquired data on these two days depicted glc of VCM in excess of 0.200 ppm. Maximum instantaneous glc of VCM were 0.48 ppm (at 11:20) and 0.67 ppm (at 11:18) for May 17th and 24th respectively. These significant concentrations were probably due to the dissipation of the nocturnal inversion by the diurnal heating effects. The winds were relatively strong ($\simeq$ 18 km/hr) and the MAM Unit was situated close to the source and directly in the low level emission plume. (See concentration/time graphs for Welland #4 and #9 on pages 48 and 53 respectively. In addition note the wind-rose on page 56 and summary Table #11 , page 37.)

The contention that the glc of VCM drops significantly with downwind distance was dramatically shown in Table #12 (page 38), which lists the mean VCM glc with respect to site location and comparing these distances as shown on Map #3 , page 15. Significant concentrations of VCM were only found within 1.0 km of the suspected source. At site D (1.15 km downwind of the B.F. Goodrich Plant), only 2 of the 61 analyzed samples (i.e., 3%) yielded detectable quantities of VCM.

The only possible source of VCM was the B.F. Goodrich plant and this is shown in the VCM/wind direction analysis for May 24th as shown in PLOT #3 , page 41.

The raw data obtained through instantaneous sampling were also statistically analyzed in different time segments (Table #13 , page 42). Of particular interest were samples #179 to #182 inclusive. These four samples were drawn on May 24th, at evenly spaced time intervals of 11.5 minutes, starting at 11:53. The mean glc of VCM was 0.35 ppm with the associated standard deviation of 0.06 ppm. Using statistical methods (confidence levels obtained from small sample populations and t-distribution curve analyses), it can be shown that the universal sample mean lies between 0.26 ppm VCM and 0.45 ppm VCM with 95% confidence. At the 98% confidence level, the universal sample mean would lie between 0.21 ppm VCM and 0.49 ppm VCM. This particular sample period spanned a total of 33 minutes. The current Ministry Guideline for the half-hour time weighted average for VCM

at the point of impingement is 0.200 ppm. Therefore, statistically, this Guideline was exceeded with 98% confidence during this period. Additional analyses were performed on other time periods and the results are presented in this same table for the reader's convenience.

It must be mentioned that on May 24th, Mr. Reid, a plant engineer with the B.F. Goodrich plant, explained that the plant was not in its' normal operational mode. Significant re-surfacing of the factory roof was being undertaken at this time and a roof-fan was not in operation, thus perhaps causing low-level VCM emissions.

On May 19th the plume from B.F. Goodrich was inaccessible. The MAM Unit was located upwind of the source. No VCM was detected.

Only 6 gas bag samples were acquired and analyzed for VCM during this survey. With permission of B.F. Goodrich, these samples were gathered on plant property and the results are shown in Table #14 , page 43. Only 4 of the 6 samples depicted any VCM. For these 4 samples, the maximum VCM glc was 0.08 ppm and the overall mean was 0.04 ppm.

Because of the sampling procedure employed with these bags, these results may be treated as true half-hour time weighted averages, and may be directly related to the half-hour VCM Guideline of 0.200 ppm. It should be stated that the results are expected to be inherently low by as much as 10% due to the continuing chemical reactions in the sample container, wall losses (due to adsorption), leaks, etc. (Reference to the Ministry of the Environment Report ARB-TDA 09-75.)

Total Hydrocarbons - THC

Monitoring glc of THC was carried out during all 11 M.P. comprising this survey and a summary of the analyzed data is presented in Table # 15 on page 44 .

Essentially low concentrations of this group of gaseous pollutants were detected throughout this survey. For the 98 hours of data, the overall average glc of THC was 2.31 ppm with an associated standard deviation of 0.83 ppm.

As noted by Mr. Reid (B.F. Goodrich plant engineer) and by MOE personnel, extensive roofing construction/repair was being carried out during this survey. The higher glc of THC, as monitored on May 16, 17, 23 and 24, may be directly attributed to this operation. During the weekends, a noticeable decrease in THC concentrations was observed.

The highest maximum half-hour average concentration of THC was recorded on May 24th and its' value was 5.6 ppm. This significant concentration was recorded under calm/cool conditions at night under a nocturnal inversion phenomenon and in the absence of ozone. (See concentration/time analysis for M.P. Welland #9, Fig. #9 on page 53.)

Ozone - O_3

Although the B.F. Goodrich PVC plant was not a suspected O_3 source, O_3 was monitored during this survey so as to establish data on regional levels and to see if there was any correlation between O_3, THC and VCM ambient air concentrations. Ozone was detected in low concentrations throughout this survey and a statistical summary is presented in Table # 15 on page 44 . The overall average glc of O_3 for the entire survey was 0.033 ppm with an associated standard deviation of 0.025 ppm.

Hi-Volume Analyses

Concurrent with the intensive ambient air monitoring programme carried out in the vicinity of B.F. Goodrich, two standard hi-volume samplers were setup in downtown Welland at 337 Alberta Street. (See Map #4, page 17). This site was selected as being downwind of the large industrial complex (comprised of Stelco and Union Carbide) located east of the Old Welland Canal system and south of Ontario Road. During this sampling period and as noted by the Ministry's Regional Office, Union Carbide was inoperative due to a labour strike.

Both hi-volume samplers were operated during the same time intervals; one exposed regular glass fibre filters for total suspended particulate (TSP) and polycyclic aromatic hydrocarbon (PAH) mass loading whereas the other exposed Delbag-Microsorban polystyrene fibre filters for silicon (Si) and alumina (Al) mass loadings.

All wind information denotes a 24-hour average and was accumulated at the Air Resources Branch's meteorological station, 309 Beatrice Street, Welland.

All hi-volume samplers operated on a 24-hour basis.

The aforementioned data is summarized in Table #16 , page 58 .

Total Suspended Particulate - TSP

During this survey, the winds were predominantly westerly (220 to 300 degrees) and essentially calm (velocities less than 7 km/hr). Therefore the sampling site was, on the average, downwind of Stelco and Union Carbide.

High TSP mass loadings were recorded throughout this survey. Six of the seven samples depicted ambient air concentrations of TSP in excess of the 24-hour Criterion 120 ug/m^3 ; the seventh sample had a TSP mass loading of 116 ug/m^3. The overall average TSP concentration was 165 ug/m^3 with associated standard deviation 29 ug/m^3. The relatively low standard deviation (18%) denoted consistent high TSP concentrations in this area.

Silica dioxide - SiO_2

High concentrations of SiO_2 were also recorded during this survey. The overall average SiO_2 concentration was 12.6 ug/m^3 (i.e., 8% of the average TSP concentrations) with associated standard deviation 14.1 ug/m^3. The maximum 24-hour concentration was 42 ug/m^3 (25% of the average TSP concentration) and was acquired on June 1st. The average winds were from the WNW - directly pointing to Stelco and Union Carbide as being the most probable sources.

Alumina - Al

Lower, yet significant, concentrations of alumina were detected in this area. The overall average Al concentration was 0.76 ug/m^3 with associated standard deviation 0.25 ug/m^3.

Again the maximum Al loading was recorded on June 1st. The 24-hour concentration was 1.32 ug/m^3.

Polycyclic Aromatic Hydrocarbons - PAH

Low concentrations of PAH were recorded at 337 Alberta Street. The overall average mass concentrations of fluoranthene, perylene, benzo (k) fluoranthene (BkF), benzo (a) pyrene (BAP) and benzo (ghi) perylene (B(ghi)P) were 0.47 ug/1000 m^3, 0.73 ug/1000 m^3, 0.38 ug/1000 m^3, 0.50 ug/1000 m^3 and 0.98 ug/1000 m^3 respectively.

The above concentrations were found to be comparable to the background readings recorded at Sault Ste. Marie in 1975 - ARB Report 24-76.

TABLE # 4 CONTAMINANT LEVELS IN THOROLD

SAMPLE NUMBER	DATE 1978	TIME	LOCATION (REF. FIG. NO.)	V.C.M. CONCEN. (ppm)	WIND SPEED (Km/Hr)	WIND DIR. (Deg.)
1	May 15	20:30	A	0.034	13	56
2	"	23:05	A	<0.001	12	45
3	"	23:35	A	<0.001	13	50
4	May 16	00:05	A	<0.001	13	54
5	"	00:35	A	<0.001	12	62
6	"	01:05	A	<0.001	12	60
7	"	01:35	A	<0.001	12	60
8	"	02:10	A	<0.001	12	75
9	"	02:40	A	<0.001	12	82
10	"	03:10	A	<0.001	12	79
11	"	03:40	A	<0.001	12	77
12	"	04:10	A	<0.001	12	78
13	"	04:40	A	<0.001	12	61
14	"	05:10	A	<0.001	12	55
15	"	05:40	A	<0.001	12	56
16	"	06:10	A	<0.001	12	59
17	"	06:40	A	<0.001	11	64
18	"	07:10	A	0.079	11	53
19	"	07:40	A	0.041	11	50
20	"	08:10	A	<0.001	11	52
21	"	08:40	A	0.107	11	42
22	"	09:10	A	0.070	12	32
23	"	13:00	A	0.002	18	62
24	"	13:15	A	<0.001	19	67
25	"	13:30	A	<0.001	20	68
26	"	14:00	A	0.145	20	58
27	"	14:30	A	<0.001	20	59
28	"	15:00	A	<0.001	21	55
29	"	15:30	A	<0.001	21	61
30	"	16:05	A	<0.001	20	56
31	"	16:15	A	0.079	20	59
32	"	16:30	A	<0.001	20	62
33	"	17:30	A	<0.001	19	58
34	"	18:00	A	<0.001	19	58
35	"	18:30	A	<0.001	18	57
36	"	19:00	A	0.138	17	46
37	"	19:30	A	0.049	17	49

TABLE #5 CONTAMINANT LEVELS IN THOROLD

SAMPLE NUMBER	DATE 1978	TIME	LOCATION (REF.FIG. NO.)	V.C.M. CONCEN. (ppm)	WIND SPEED (Km/Hr)	WIND DIR. (Deg.)
38	May 16	20:00	A	<0.001	17	12
39	"	20:30	A	0.001	15	1
40	"	21:00	A	<0.001	14	0
41	"	21:30	A	<0.001	13	339
42	"	22:15	B	<0.001	11	336
43	"	22:50	B	<0.001	11	325
44	"	23:20	B	<0.001	12	323
45	"	23:50	B	<0.001	12	320
46	May 17	00:20	B	<0.001	12	319
47	"	00:50	B	<0.001	13	330
48	"	01:20	B	0.017	13	325
49	"	01:50	B	0.020	13	331
50	"	02:20	B	0.331	14	338
51	"	02:50	B	<0.001	13	340
52	"	03:20	B	0.046	14	338
53	"	03:50	B	0.122	13	342
54	"	04:20	B	0.142	13	6
55	"	04:50	B	0.035	12	0
56	"	05:20	B	0.076	11	14
57	"	05:50	B	0.044	11	21
58	"	06:20	B	0.043	11	22
59	"	06:50	B	0.023	12	31
60	"	07:20	B	<0.001	12	29
61	"	07:50	B	<0.001	12	26
62	"	08:20	B	<0.001	12	21
63	"	08:50	B	<0.001	13	27
64	"	09:20	B	<0.001	14	26
65	"	11:20	C	0.485	14	21
66	"	11:40	C	0.404	14	23
67	"	11:52	C	0.102	14	21
68	"	12:04	C	0.056	14	22
69	"	12:16	C	0.180	14	24
70	"	12:28	C	<0.001	14	27
71	"	12:45	C	0.007	15	36
72	"	13:15	C	<0.001	16	51
73	"	13:45	C	<0.001	18	53
74	"	14:15	C	<0.001	18	54

TABLE # 6 CONTAMINANT LEVELS IN THOROLD

SAMPLE NUMBER	DATE 1978	TIME	LOCATION (REF.FIG. NO.)	V.C.M. CONCEN. (ppm)	WIND SPEED (Km/Hr)	WIND DIR. (Deg.)
75	May 17	14:45	C	<0.001	17	46
76	"	15:20	C	<0.001	18	354
77	"	15:35	C	<0.001	18	352
78	"	15:50	C	0.080	19	354
79	"	16:20	C	0.070	22	353
80	"	16:50	C	<0.001	24	345
81	"	17:00	C	<0.001	24	345
82	"	17:30	C	<0.001	24	347
83	"	18:00	C	0.037	21	18
84	"	18:30	C	0.064	19	17
85	"	19:00	C	<0.001	18	11
86	"	19:30	C	<0.001	17	35
87	"	20:00	C	<0.001	17	337
88	"	20:30	C	<0.001	16	340
89	"	21:00	C	<0.001	15	336
90	"	21:30	C	<0.001	14	309
91	"	22:40	C	<0.001	13	311
92	"	23:33	B	<0.001	11	300
93	"	24:00	B	<0.001	11	295
94	May 18	00:30	B	<0.001	11	167
95	"	01:00	B	<0.001	10	14
96	"	01:30	B	0.096	9	6
97	"	02:00	B	<0.001	11	284
98	"	02:30	B	<0.001	11	291
99	"	03:00	B	0.079	11	331
100	"	03:30	B	0.104	11	346
101	"	04:00	B	0.017	10	345
102	"	04:30	B	<0.001	11	19
103	"	05:00	B	<0.001	12	74
104	"	05:30	B	<0.001	12	222
105	"	06:00	B	<0.001	12	234
106	"	06:30	B	<0.001	12	233
107	"	07:00	B	<0.001	13	253
108	"	08:00	B	<0.001	13	277
109	"	08:30	B	<0.001	14	265
110	"	09:00	B	<0.001	16	277
111	"	09:30	B	<0.001	17	244

TABLE # 7 CONTAMINANT LEVELS IN THOROLD

SAMPLE NUMBER	DATE 1978	TIME	LOCATION (REF.FIG. NO.)	V.C.M. CONCEN. (ppm)	WIND SPEED (Km/Hr)	WIND DIR. (Deg.)
112	May 18	10:00	B	0.090	-	-
113	"	12:15	D	<0.001	-	-
114	"	12:45	D	<0.001	-	-
115	"	13:15	D	<0.001	-	-
116	"	18:55	D	0.023	-	-
117	"	19:25	D	0.025	-	-
118	"	19:35	D	<0.001	-	-
119	"	20:00	D	<0.001	-	-
120	"	20:30	D	<0.001	-	-
121	"	21:00	D	<0.001	-	-
122	"	21:30	D	<0.001	-	-
123	"	22:00	D	<0.001	-	-
124	"	22:30	D	<0.001	-	-
125	"	23:00	D	<0.001	-	-
126	"	23:30	D	<0.001	-	-
127	"	24:00	D	<0.001	-	-
128	May 19	00:30	D	<0.001	-	-
129	"	01:00	D	<0.001	-	-
130	"	01:30	D	<0.001	-	-
131	"	02:00	D	<0.001	-	-
132	"	02:30	D	<0.001	-	-
133	"	03:00	D	<0.001	-	-
134	"	03:30	D	<0.001	-	-
135	"	04:00	D	<0.001	-	-
136	"	04:30	D	<0.001	-	-
137	"	05:00	D	<0.001	-	-
138	"	05:30	D	<0.001	-	-
139	"	06:00	D	<0.001	-	-
140	"	06:30	D	<0.001	-	-
141	"	07:00	D	<0.001	-	-
142	"	07:30	D	<0.001	-	-
143	"	08:00	D	<0.001	-	-
144	"	08:30	D	<0.001	-	-
145	May 23	16:25	D	<0.001	9	259
146	"	17:20	D	<0.001	7	262
147	"	17:50	D	<0.001	7	259
148	"	18:20	D	<0.001	7	258

TABLE # 8 CONTAMINANT LEVELS IN THOROLD

SAMPLE NUMBER	DATE 1978	TIME	LOCATION (REF.FIG. NO.)	V.C.M. CONCEN. (ppm)	WIND SPEED (Km/Hr)	WIND DIR. (Deg.)
149	May 23	18:50	D	<0.001	4	239
150	"	19:20	D	<0.001	3	195
151	"	19:50	D	<0.001	2	217
152	"	20:20	D	<0.001	1	203
153	"	20:50	D	<0.001	0	205
154	"	21:20	D	<0.001	0	215
155	"	21:50	D	<0.001	0	216
156	"	22:20	D	<0.001	0	284
157	"	22:50	D	<0.001	0	56
158	"	23:20	D	<0.001	0	63
159	"	23:50	D	<0.001	0	151
160	May 24	00:20	D	<0.001	0	137
161	"	00:50	D	<0.001	0	129
162	"	01:20	D	<0.001	0	136
163	"	01:50	D	<0.001	0	294
164	"	02:20	D	<0.001	0	281
165	"	02:50	D	<0.001	1	101
166	"	03:20	D	<0.001	1	51
167	"	03:50	D	<0.001	0	103
168	"	04:20	D	<0.001	1	119
169	"	04:50	D	<0.001	0	259
170	"	05:20	D	<0.001	1	15
171	"	05:50	D	<0.001	2	14
172	"	06:20	D	<0.001	2	7
173	"	06:50	D	<0.001	7	25
174	"	09:00	A	0.031	-	-
175	"	09:30	A	0.302	-	-
176	"	11:18	A	0.667	-	-
177	"	11:29	A	0.151	-	-
178	"	11:40	A	0.121	-	-
179	"	11:53	A	0.321	-	-
180	"	12:04	A	0.273	15	354
181	"	12:15	A	0.398	15	357
182	"	12:26	A	0.391	16	358
183	"	12:38	A	0.029	16	1
184	"	12:49	A	0.344	15	2
185	"	13:00	A	0.075	13	7

TABLE # 9 CONTAMINANT LEVELS IN THOROLD

SAMPLE NUMBER	DATE 1978	TIME	LOCATION (REF. FIG. NO.)	V.C.M. CONCEN. (ppm)	WIND SPEED (Km/Hr)	WIND DIR. (Deg.)
186	May 24	13:11	A	<0.001	12	10
187	"	13:23	A	0.068	12	8
188	"	13:34	A	0.260	14	3
189	"	13:45	A	0.297	15	3
190	"	13:55	A	<0.001	15	7
191	"	15:45	A	0.247	21	4
192	"	15:56	A	0.146	20	4
193	"	16:07	A	0.155	20	3
194	"	16:18	A	0.118	19	1
195	"	16:29	A	<0.001	17	1
196	"	16:40	A	0.077	17	4
197	"	16:51	A	0.099	17	6
198	"	17:02	A	0.131	18	4
199	"	17:13	A	0.060	18	3
200	"	17:24	A	0.150	17	2
201	"	17:35	A	0.115	16	1
202	"	17:46	A	0.093	17	0
203	"	17:57	A	0.148	17	1
204	"	18:10	A	0.132	15	3
205	"	18:21	A	0.428	14	3
206	"	18:32	A	0.196	13	1
207	"	18:43	A	0.003	13	0
208	"	18:54	A	0.102	12	359
209	"	19:10	A	0.197	11	357
210	"	19:21	A	0.343	10	357
211	"	19:32	A	<0.001	9	359
212	"	19:43	A	0.060	7	0
213	"	19:54	A	<0.001	6	1
214	"	20:00	A	<0.001	6	359
215	"	20:11	A	0.066	5	356
216	"	20:22	A	<0.001	5	353
217	"	20:34	A	0.008	5	351
218	"	20:45	A	<0.001	4	351
219	"	20:56	A	<0.001	3	354
220	"	21:07	A	<0.001	1	358
221	"	21:18	A	<0.001	0	358
222	"	21:30	A	<0.001	0	320

TABLE #10 CONTAMINANT LEVELS IN THOROLD

SAMPLE NUMBER	DATE 1978	TIME	LOCATION (REF.FIG. NO.)	V.C.M. CONCEN. (ppm)	WIND SPEED (Km/Hr)	WIND DIR. (Deg.)
223	May 24	21:41	A	<0.001	1	303
224	"	21:52	A	<0.001	1	302
225	"	22:05	A	0.185	1	238
226	"	22:16	A	<0.001	0	175
227	"	23:20	A	<0.001	0	84
228	"	23:31	A	<0.001	0	123
229	"	23:42	A	0.020	0	164
230	"	23:53	A	<0.001	0	180
231	May 25	00:05	A	<0.001	0	234
232	"	00:16	A	<0.001	0	283
233	"	00:28	A	0.016	0	343
234	"	00:39	A	<0.001	1	350
235	"	00:50	A	0.049	3	356
236	"	01:01	A	0.109	3	356
237	"	01:12	A	0.118	3	357
238	"	12:30	E	<0.001	6	315
239	"	12:41	E	0.102	7	320
240	"	12:53	E	0.104	8	326
241	"	18:15	E	<0.001	4	302
242	"	18:45	E	<0.001	6	231
243	"	19:15	E	<0.001	3	214
244	"	20:15	E	<0.001	3	220
245	"	20:55	E	<0.001	2	220
246	"	21:25	E	<0.001	3	212
247	"	21:55	E	<0.001	2	221
248	"	22:25	E	<0.001	2	210
249	"	22:55	E	<0.001	1	200

TABLE # 11

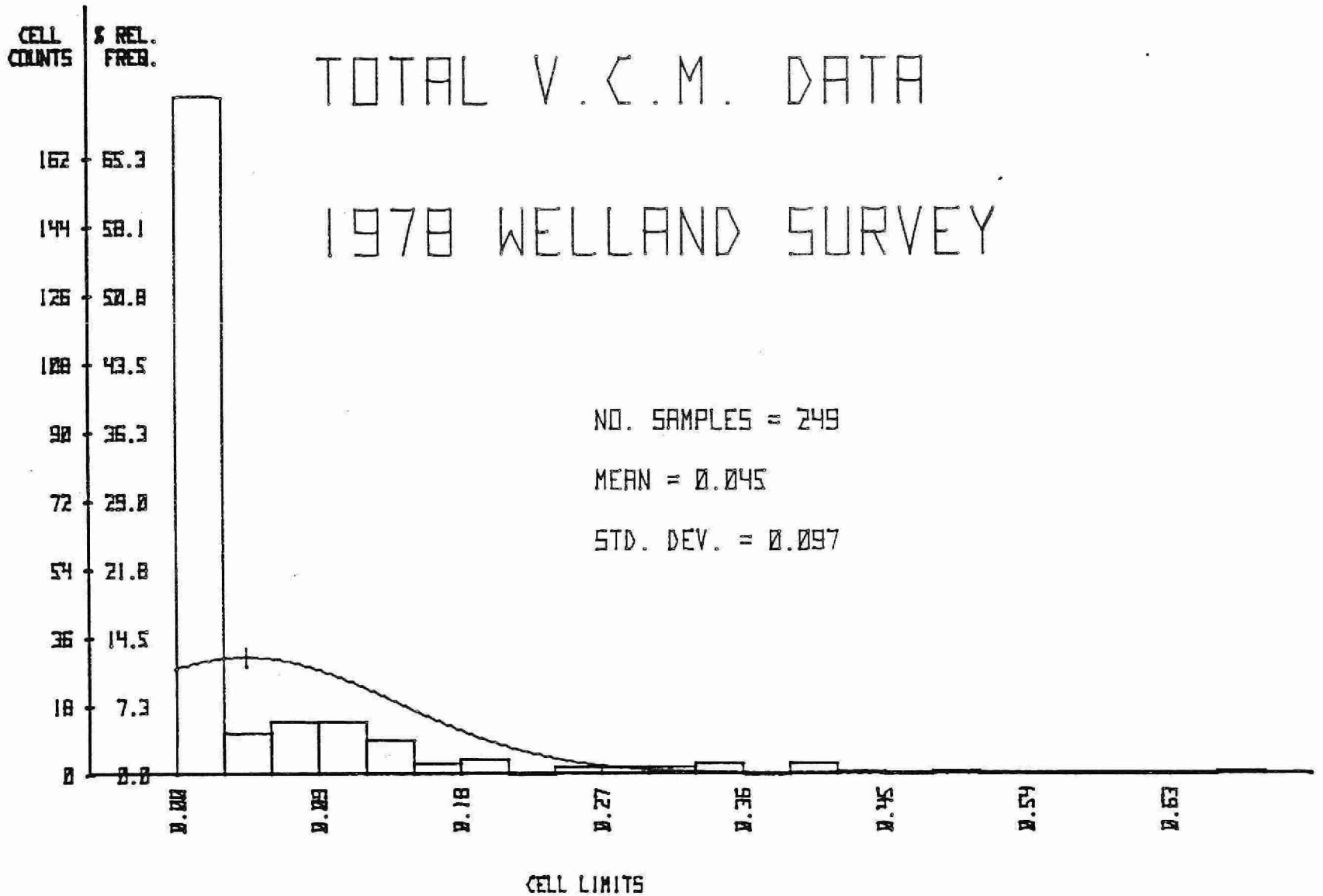
DAILY VCM DATA ANALYSIS

DATE MAY, 1978	TOTAL # RUNS	# RUNS >0.001 PPM	# RUNS >0.100 PPM	# RUNS >0.200 PPM	DAILY MEAN	ST. DEV.
15	3	1(33%)	Ø	Ø	0.011	-
16	42	9(21%)	3(7%)	Ø	0.017	0.038
17	48	21(44%)	7(15%)	3(6%)	0.052	0.105
18	34	7(21%)	1(3%)	Ø	0.013	0.030
19	17	Ø	Ø	Ø	-	-
23	15	Ø	Ø	Ø	-	-
24	71	39(55%)	26(37%)	12(17%)	0.100	0.138
25	19	6(32%)	4(21%)	Ø	0.027	0.055
TOTAL	249	83(33%)	40(16%)	15(6%)		
	OVERALL MEAN = 0.045					
OVERALL ST. DEV. = 0.097						
	(MIN. DETECTABLE SIGNAL $\simeq$ 0.0005 PPM)					

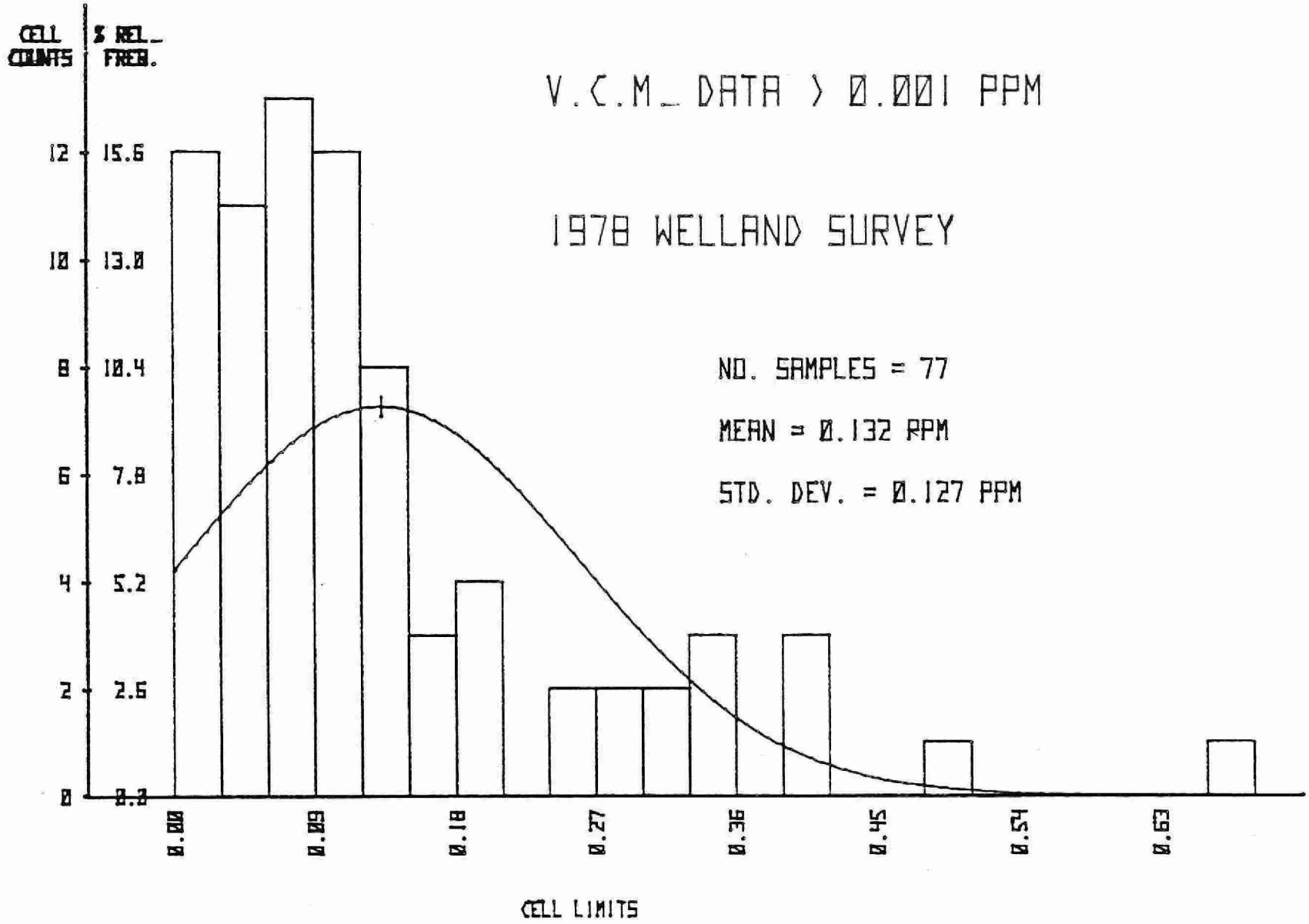
TABLE # 12

SITE ANALYSIS OF VCM DATA

SITE	TOTAL # RUNS	# RUNS >0.001 PPM	# RUNS >0.100 PPM	# RUNS >0.200 PPM	MEAN	ST. DEV.
A	105	53	31	12	0.077	0.120
B	44	16	4	1	0.030	0.004
C	27	10	4	2	0.055	0.014
D	61	2	0	0	0.001	<0.001
E	12	2	2	0	0.018	0.001

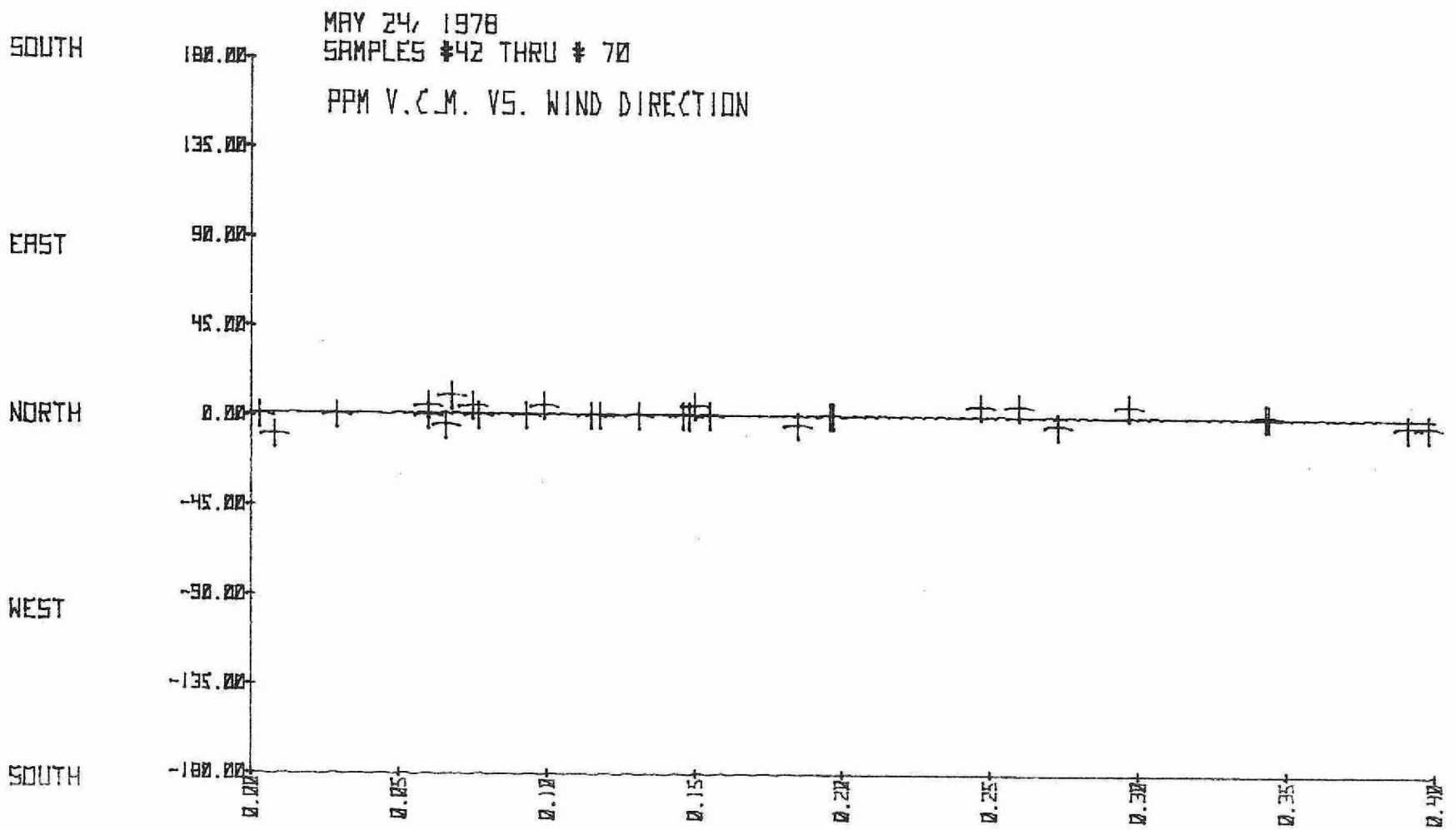

TOTAL V.C.M. DATA
1978 WELLAND SURVEY
NO. SAMPLES = 249
MEAN = 0.045
STD. DEV. = 0.097
CELL COUNTS
% REL. FREQ.
162
144
126
108
90
72
54
36
18
0
65.3
58.1
50.8
43.5
36.3
29.0
21.8
14.5
7.3
0.0
0.09
0.18
0.27
0.36
0.45
0.54
0.63
CELL LIMITS

PLOT #1


CELL COUNTS
% REL. FREQ.
V.C.M. DATA > 0.001 PPM
1978 WELLAND SURVEY
NO. SAMPLES = 77
MEAN = 0.132 PPM
STD. DEV. = 0.127 PPM
12
15.6
10
13.0
8
10.4
6
7.8
4
5.2
2
2.6
0
0.0
0.09
0.18
0.27
0.36
0.45
0.54
0.63
CELL LIMITS

PLOT #2

NO. POINTS= 29



PLOT # 3

TABLE 13

VCM Statistical Analyses - 249 samples					Probabilities - ½ hour universal means - units PPM				
Samples	Number	Duration	Average	St. deviation	99%	98%	95%	90%	80%
65 - 67	3	32 min	0.330 ppm	0.202 ppm	0 - 1.517	0 - 1.163	0 - 0.849	0 - 0.684	0.113 - 0.561
65 - 69	5	56 min	0.245 ppm	0.189 ppm	0 - 0.761	0 - 0.674	0.012 - 0.576	0.078 - 0.510	0.138 - 0.450
175 - 182	8	176 min	0.328 ppm	0.170 ppm	0.195 - 0.887	0.244 - 0.838	0.307 - 0.775	0.353 - 0.729	0.401 - 0.681
179 - 182	4	33 min	0.346 ppm	0.060 ppm	0.175 - 0.531	0.215 - 0.492	0.256 - 0.450	0.281 - 0.425	0.303 - 0.403
196 - 210	15	161 min	0.152 ppm	0.108 ppm	0.111 - 0.379	0.127 - 0.363	0.149 - 0.341	0.166 - 0.324	0.185 - 0.305
1 - 249	249	6247 min	0.045 ppm	0.097 ppm					

VCM concentrations less than 0.001 ppm were assigned values 0.0005 ppm (i.e., ½ of the minimal detectable signal) for these analyses.

TABLE # 14 GAS CHROMATOGRAPH -- SURVEY IN Welland , 1978

PLANT : B.F. Goodrich (BAG SAMPLES)

SAMPLE NUMBER	DATE	TIME & LOCATION	MAP REF	COMMENT	CONCENTRATIONS -- PPM						
					C_2H_4	C_2H_6	C_3H_6	C_3H_8	V.C.	C_4H_{10}	?
#1	May 16/78	15:15 - 15:50 (64865 - 47672) 0.14 km and 225 dgs/water tower		360/10 km/hr					0.079		
#2	May 17/78	15:20 - 15:40 (64890 - 47671) 0.33 km and 130 dgs/water tower		360/10 km/hr					0.041		
#3	May 18/78	12:15 - 12:40 (64850 - 47672) 0.2 km and 225 dgs/water tower		CALM					0.023		
#4	May 18/78	16:05 - 16:15 (64850 - 47672) 0.2 km and 225 dgs/water tower		315/5 km/hr					-		
#5	May 19/78	--------- no peaks ----------		-					-		
#6	May 25/78	15:40 - 16:10 (64890 - 47673) 0.25 km and 90 dgs/water tower		315/5 km/hr					0.030		
				Average					0.043		
				St. Deviation					0.025		

TABLE # 15 Contaminant Levels in Units - PPM

LOCATION	Date 1978	Monitored Period	Instantaneous Concentration THC Min.	Instantaneous Concentration THC Max.	Instantaneous Concentration O_3 Min.	Instantaneous Concentration O_3 Max.	Maximum 1/2 Hour Average Concentration THC	Maximum 1/2 Hour Average Concentration O_3	Sample Period Mean Concentration THC	Sample Period Mean Concentration O_3	Scan Time (min.)
Welland #1	May 15	17:26 - 09:11	0.001	2.42	0.001	0.038	2.2	0.036	1.71	0.010	2.5
Welland #2	May 16	11:52 - 21:37	1.77	3.22	0.004	0.057	2.0	0.053	1.91	0.042	2.5
Welland #3	May 16	22:16 - 09:46	1.78	4.01	0.002	0.039	2.9	0.038	2.27	0.023	2.5
Welland #4	May 17	10:39 - 22:39	1.70	5.13	0.003	0.052	3.3	0.049	2.18	0.025	2.5
Welland #5	May 17	23:53 - 09:38	1.83	4.42	0.002	0.020	2.60	0.018	2.22	0.009	2.5
Welland #6	May 23	16:12 - 17:02	0.001	2.77	0.060	0.081	2.0	0.073	1.84	0.072	2.5
Welland #7	May 23	17:21 - 20:51	0.551	4.66	0.013	0.091	2.7	0.086	1.16	0.058	2.5
Welland #8	May 23	21:09 - 08:24	0.729	12.2	0.001	0.037	4.3	0.030	2.46	0.009	2.5
Welland #9	May 24	11:59 - 10:29	2.14	9.78	0.001	0.102	5.6	0.096	3.52	0.038	2.5
Welland #10	May 25	12:02 - 12:52	2.65	3.50	0.069	0.001	2.8	0.080	2.83	0.078	2.5
Welland #11	May 25	14:18 - 15:48	2.37	5.07	0.058	0.118	3.1	0.100	2.83	0.094	1.5
Welland #12	May 25	17:51 - 09:06		MET DATA ONLY							

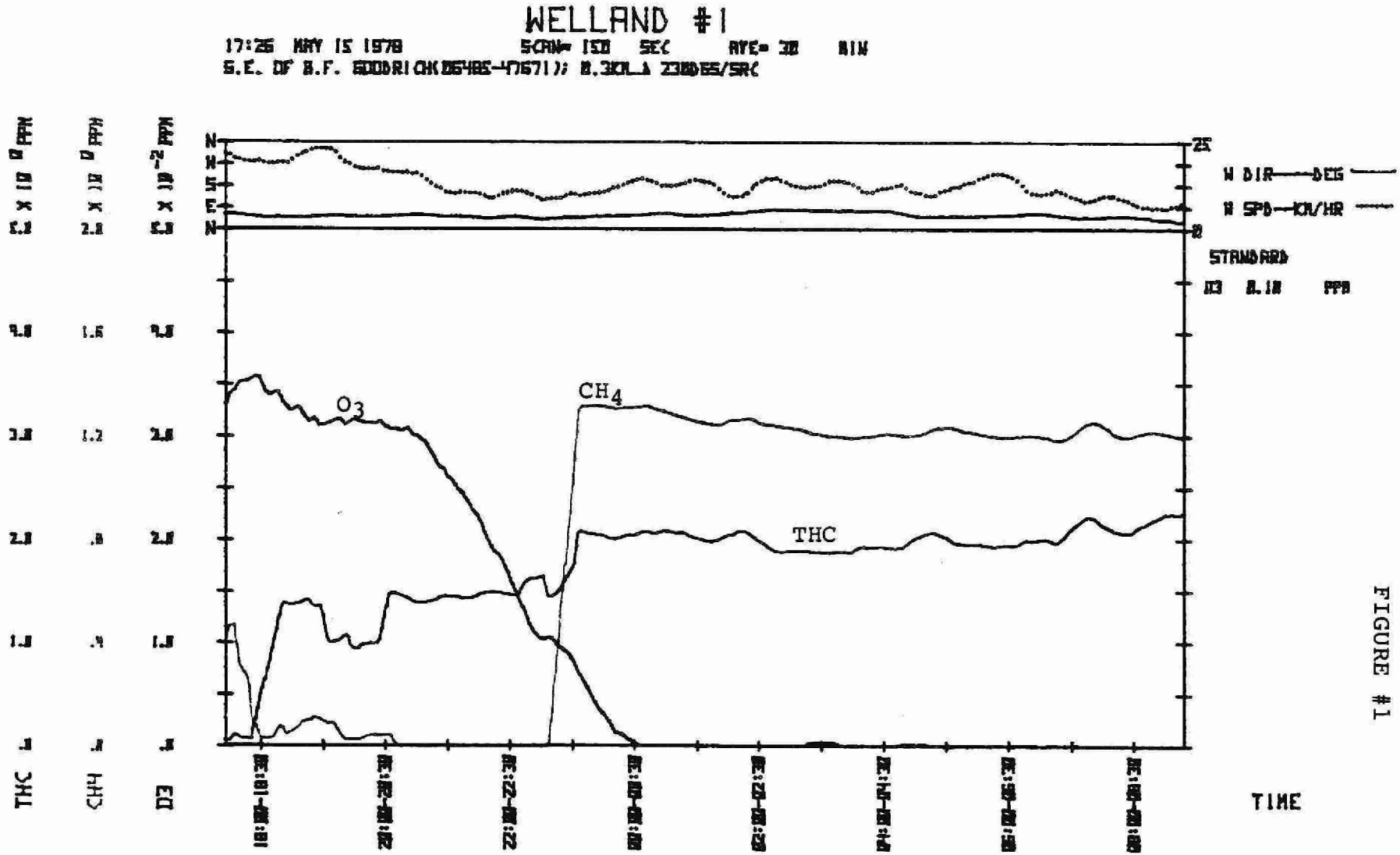
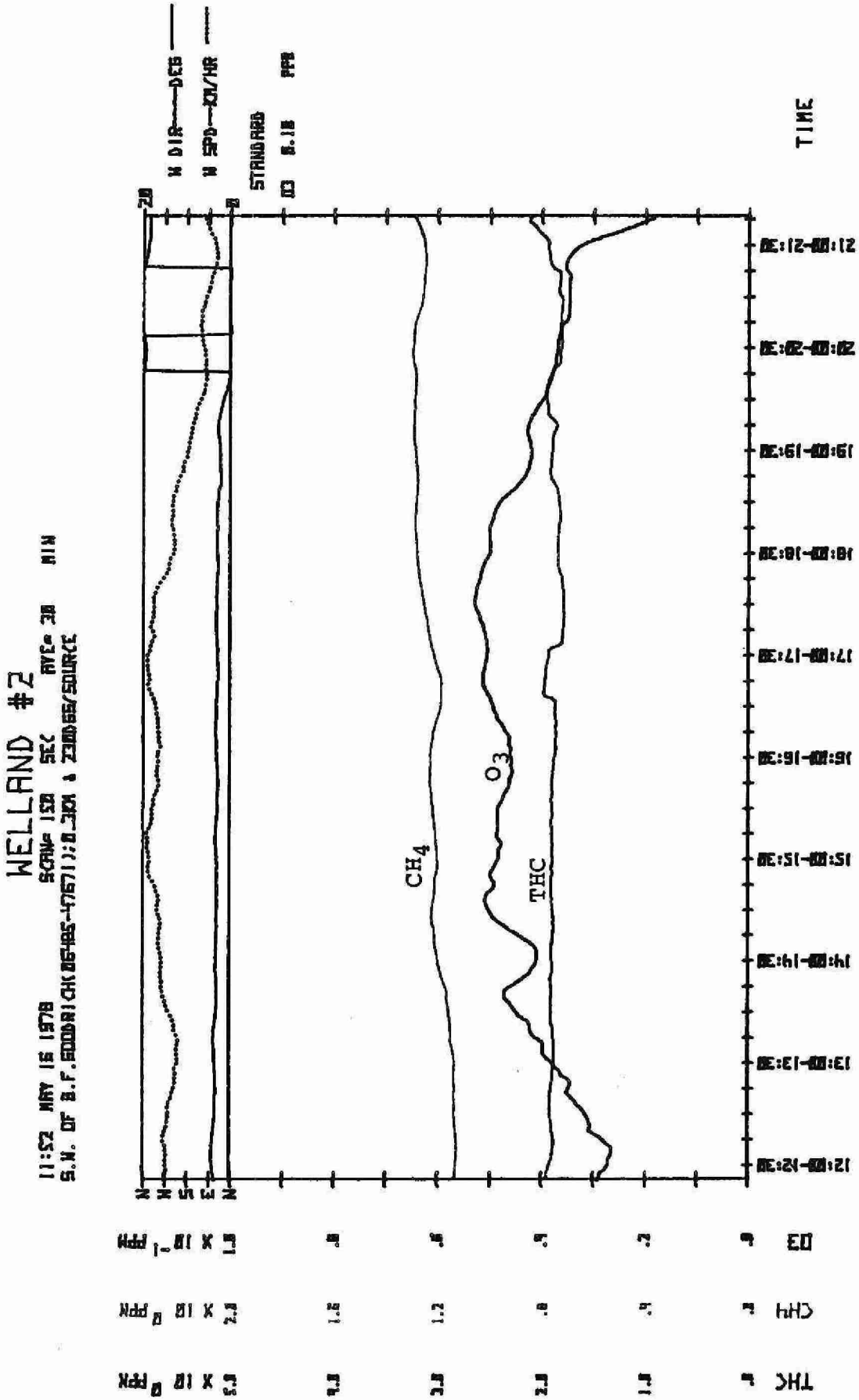

WELLAND #1
17:26 MAY 15 1978
SCAN= 150 SEC
AVE= 30 MIN
S.E. OF B.F. GOODRICH(0648S-4767I); B.3KM_A 238DEG/SRC
THC
CH4
O3
N DIR——DEG
N SPD—KM/HR
STANDARD
O3 0.10 PPM
TIME

FIGURE #1

FIGURE #2


WELLAND #2
11:52 MAY 16 1978
S.W. OF B.F.
N DIR
N SPD
STANDARD
TIME
CH_4
O_3
THC
THC
CH4
O3

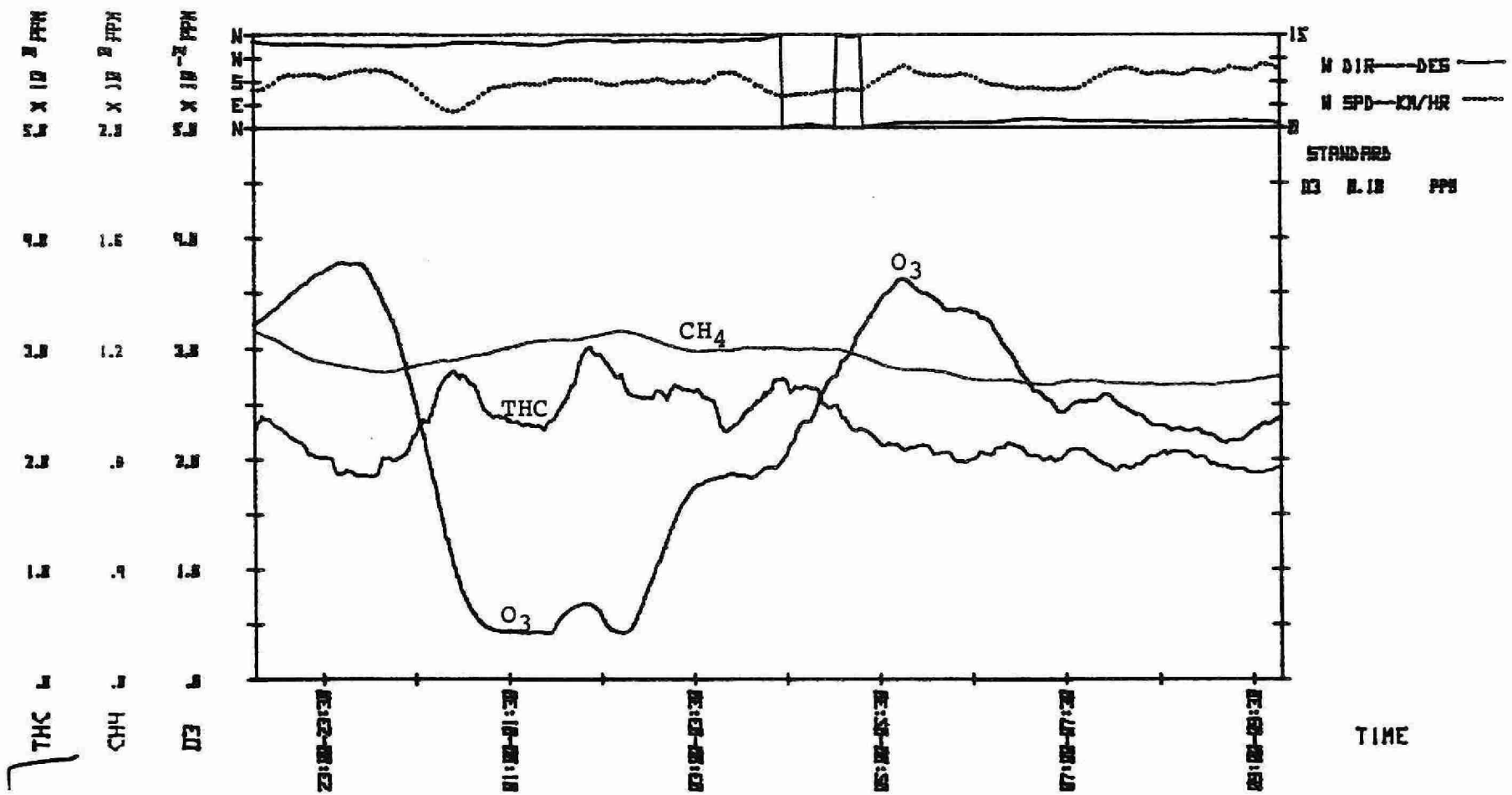

WELLAND #3
22:16 MAY 16 1978
SCAN= 1SD SEC
AVE= 30 MIN
S.W. OF B.F.GOODRICH
N DIR——DEG
N SPD——KM/HR
STANDARD
O3 0.10 PPM
THC
CH4
O3
TIME

FIGURE #3

FIGURE #4

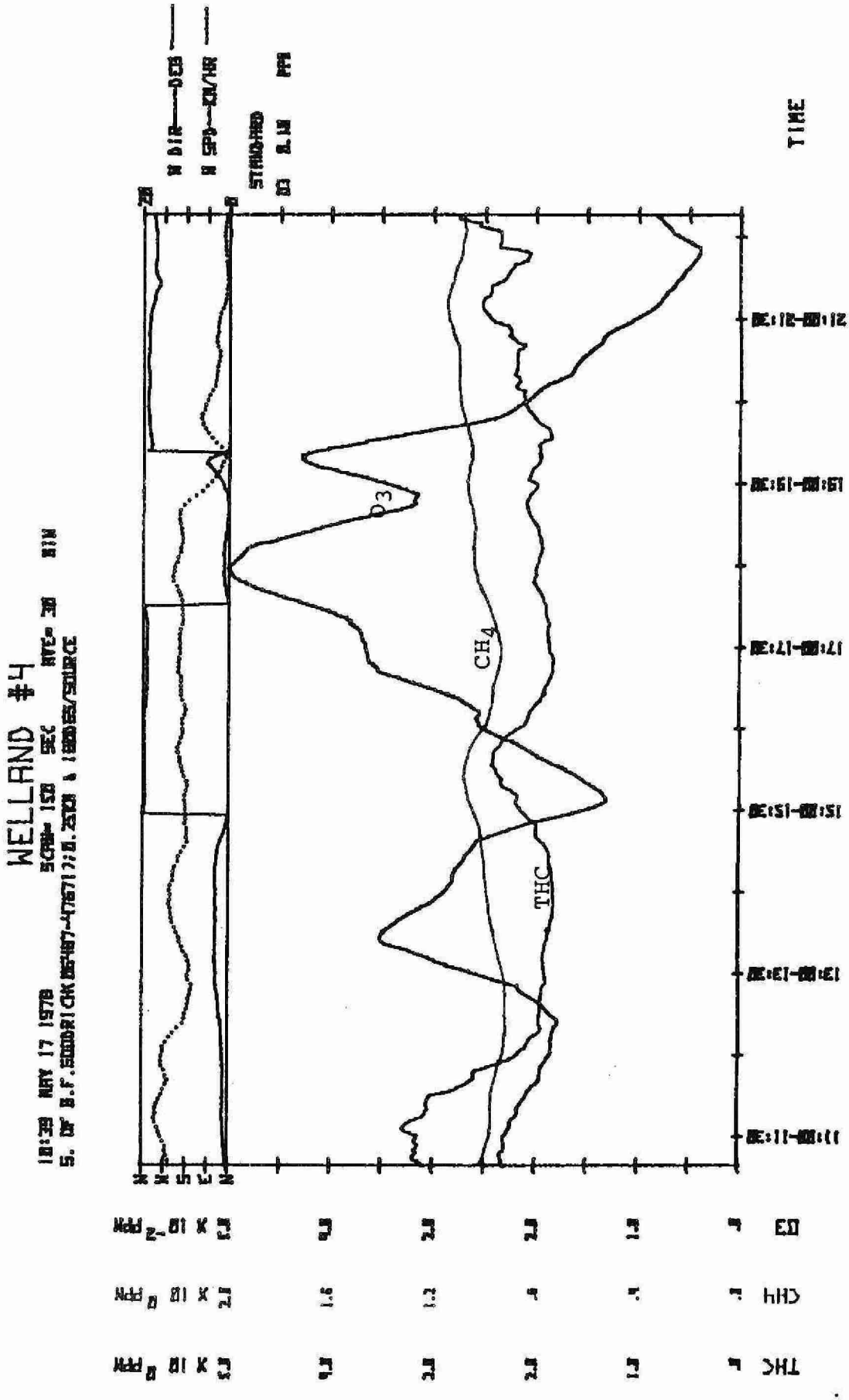


FIGURE #5

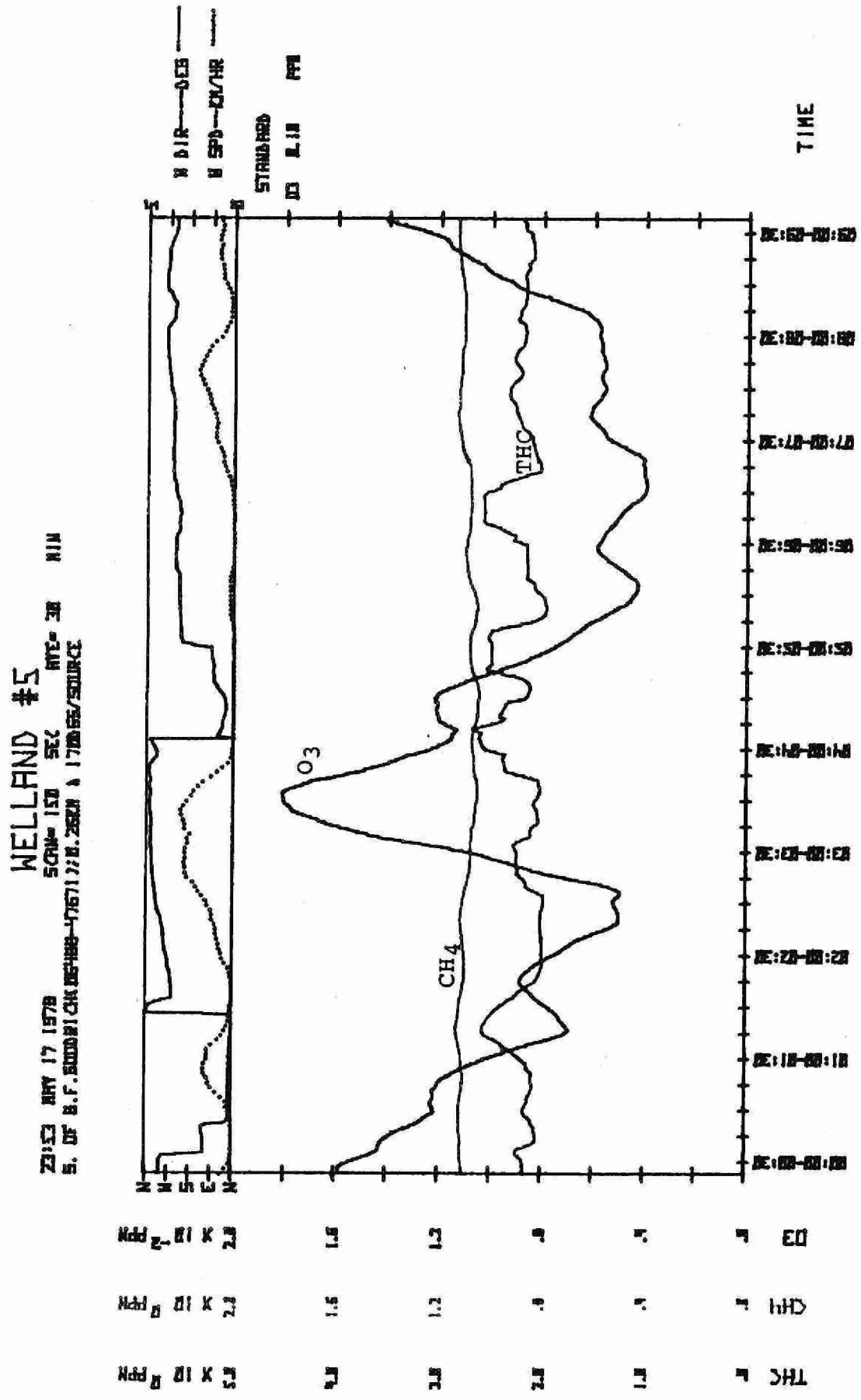


FIGURE #6

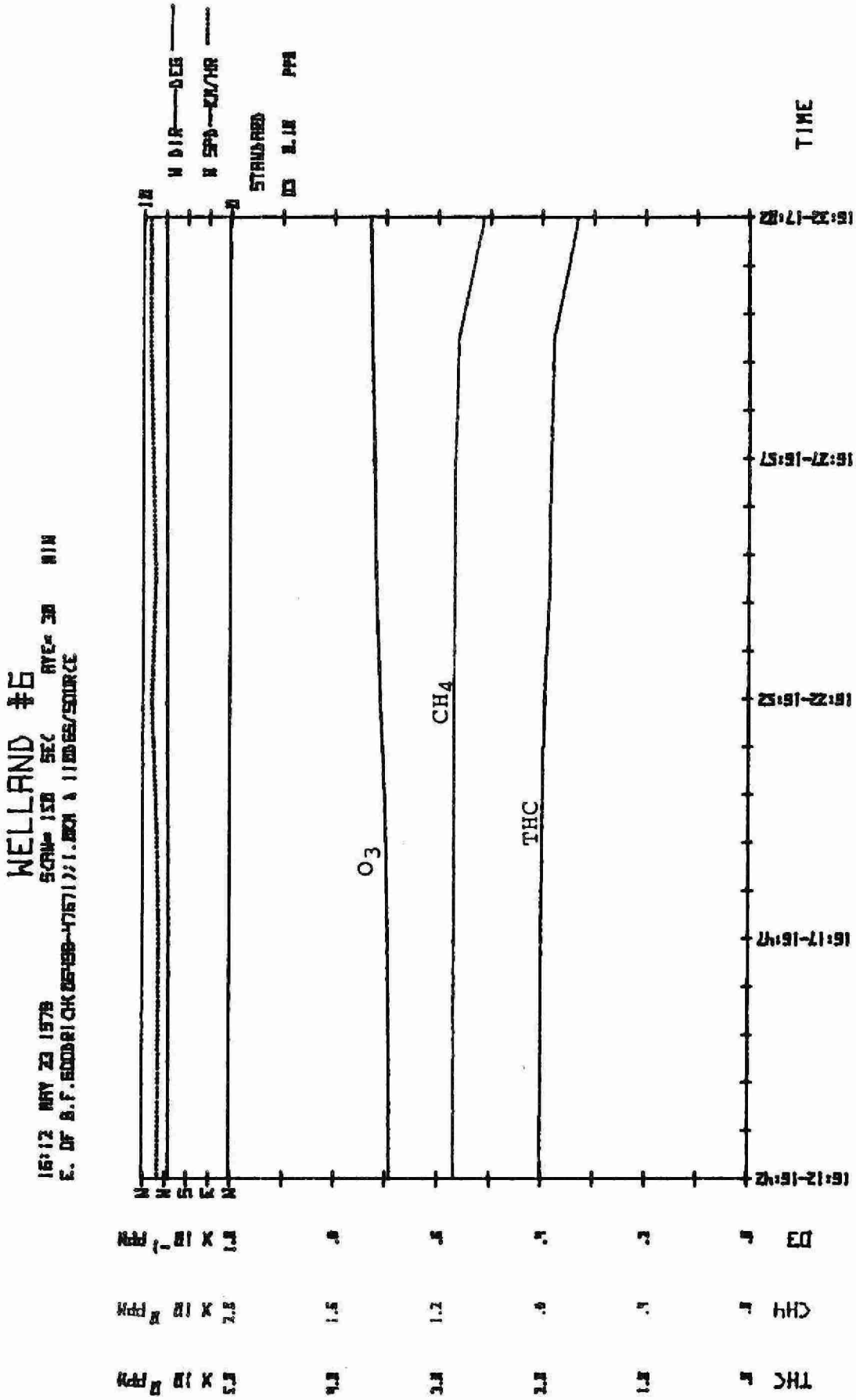


FIGURE #7

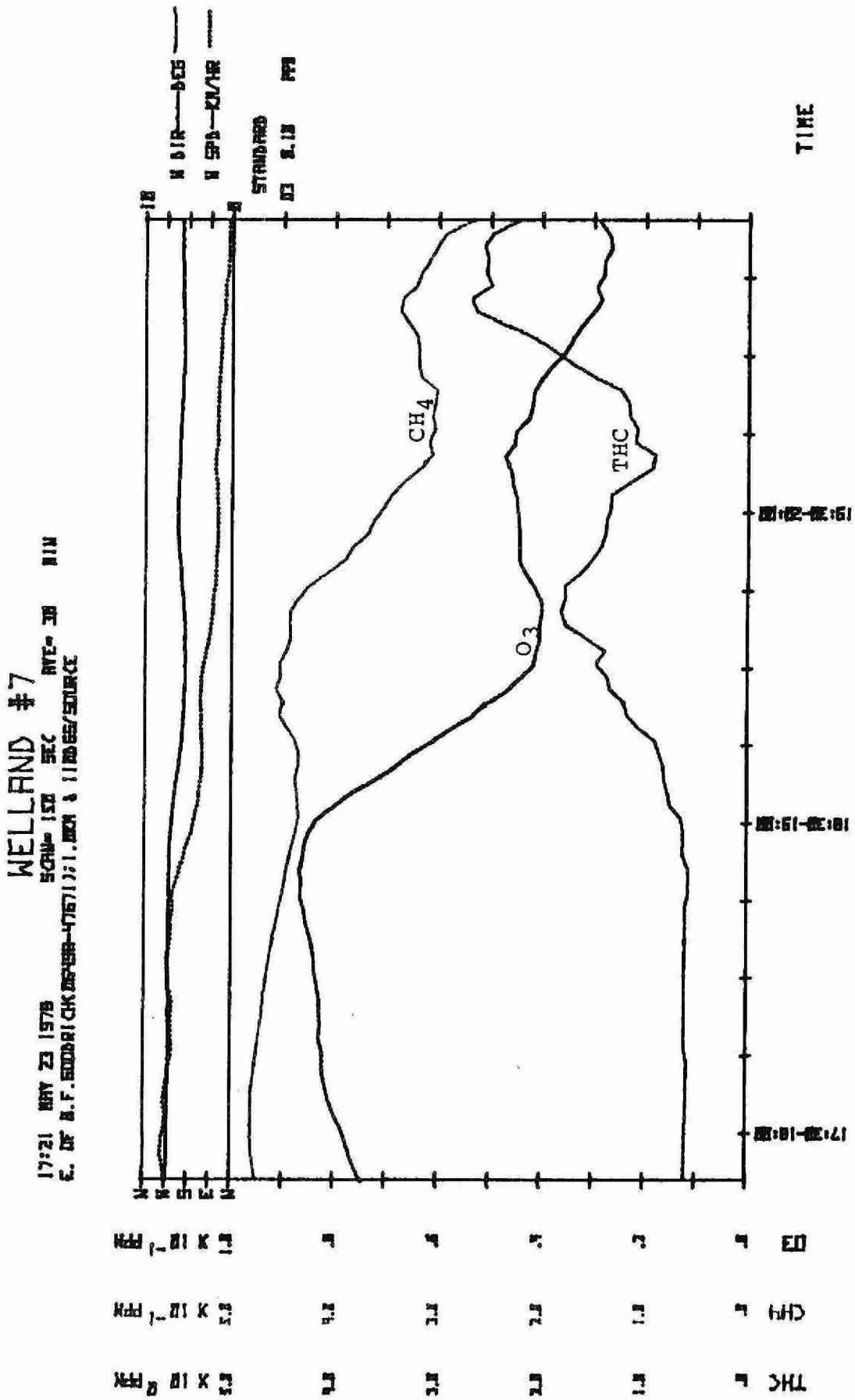


FIGURE #8

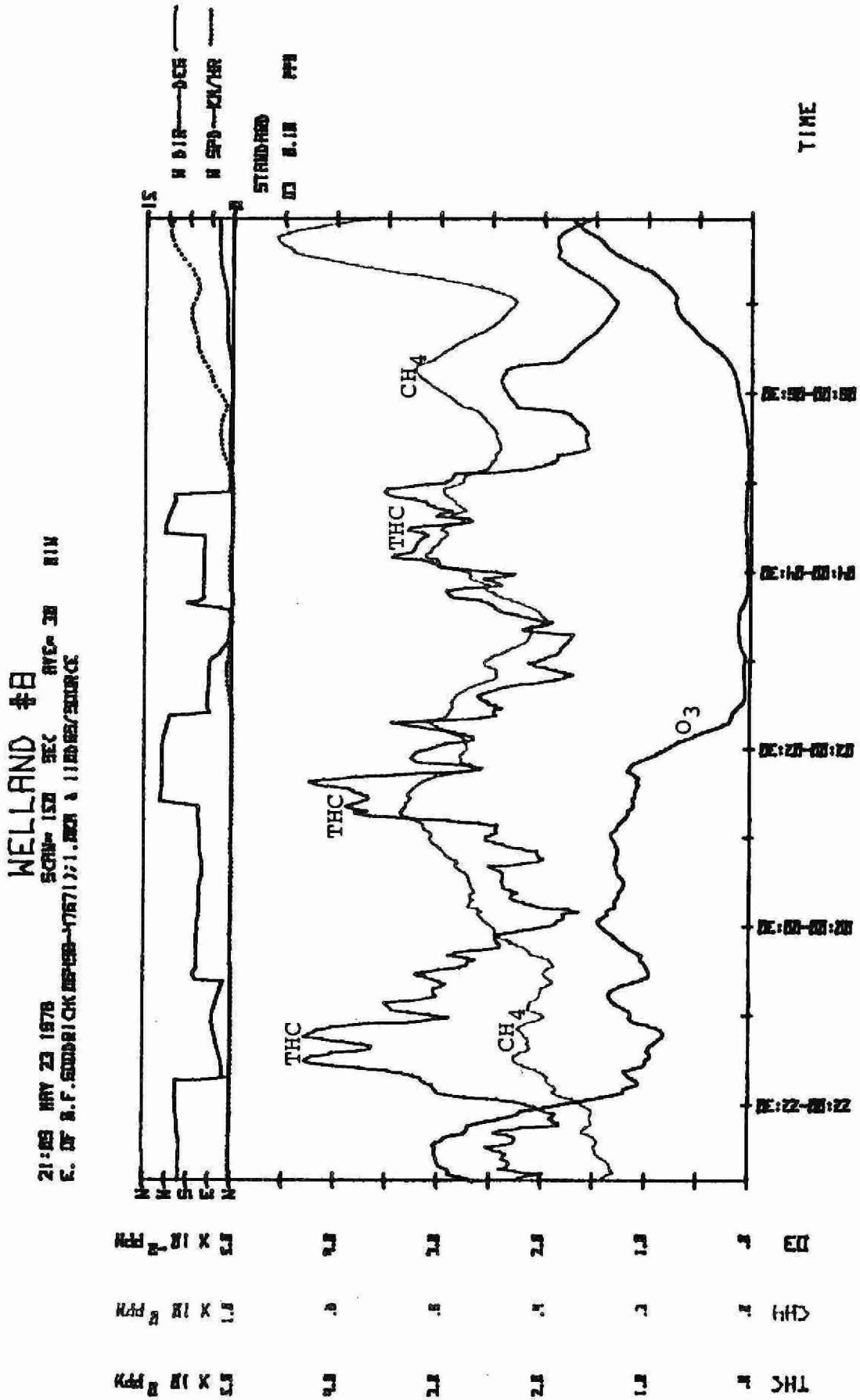
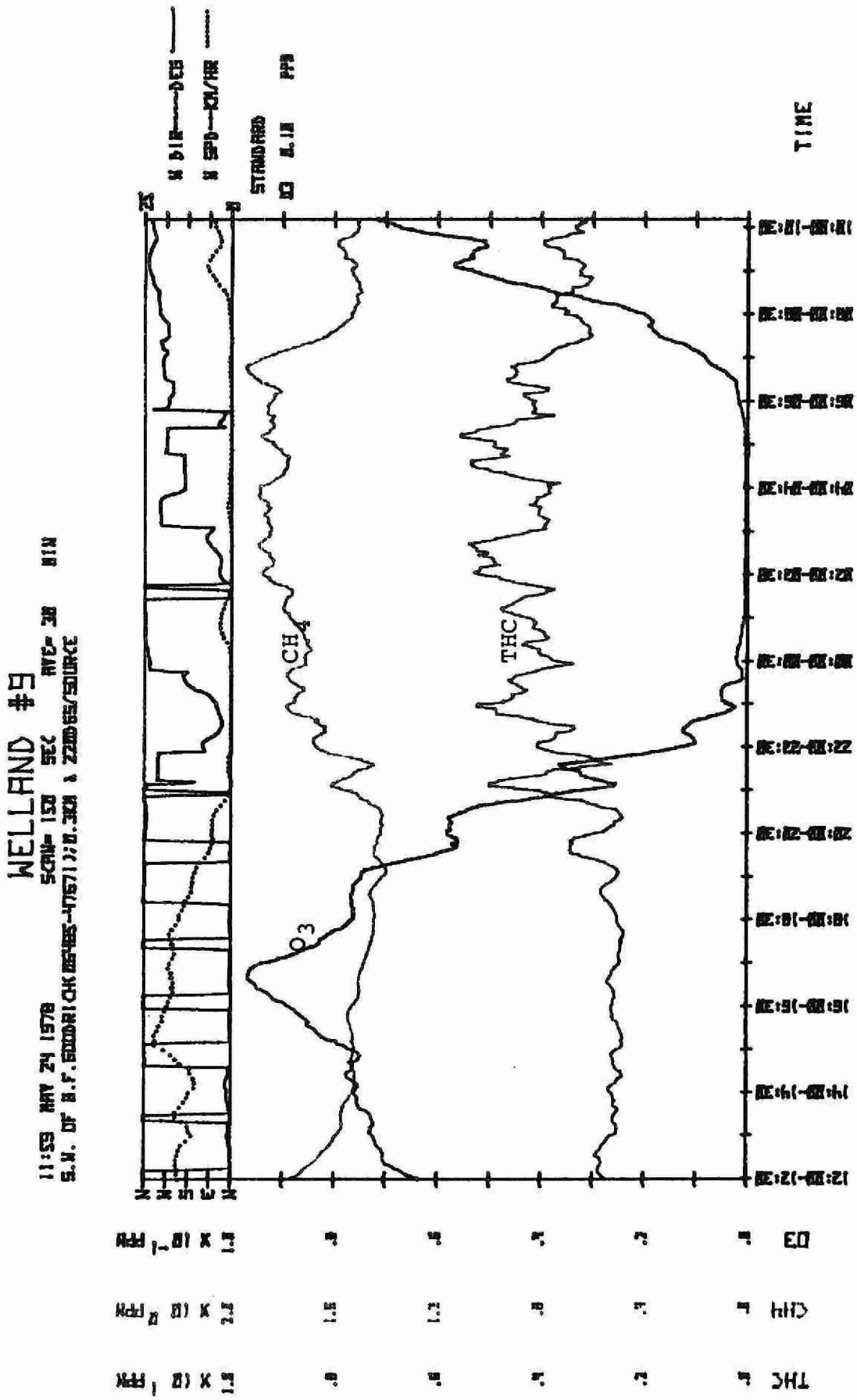


FIGURE #9



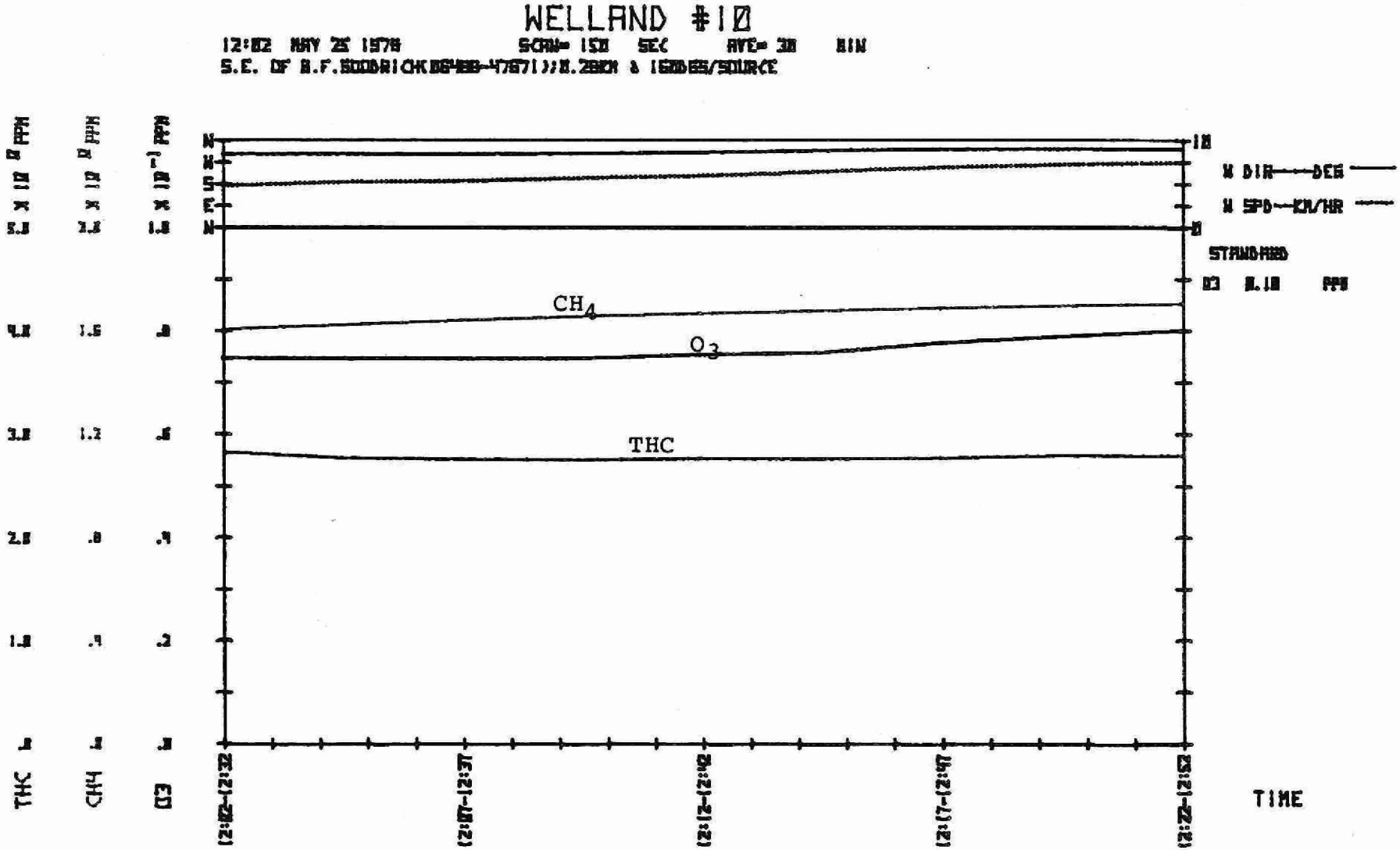
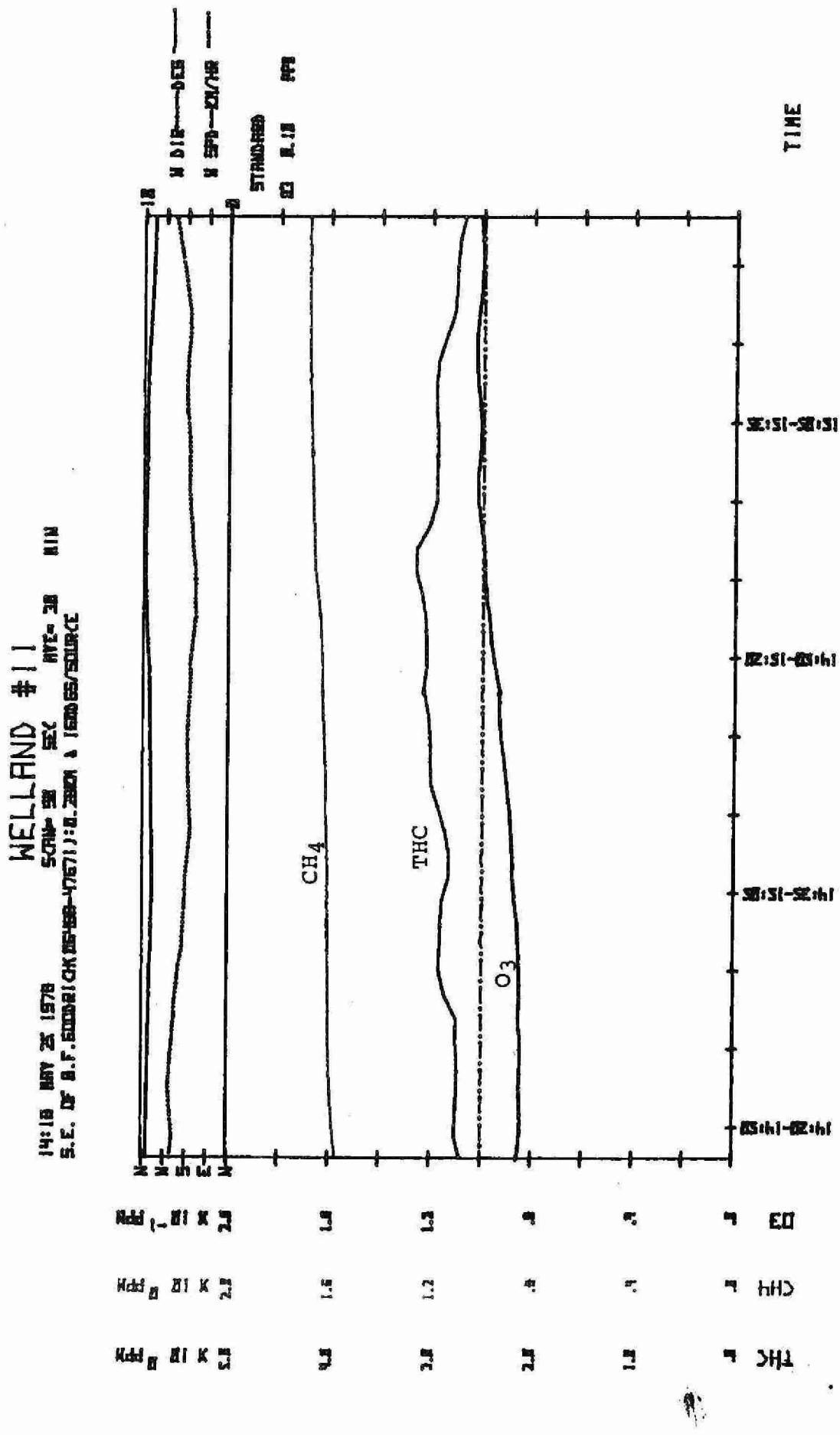

WELLAND #10
12:02 MAY 25 1978
SCAN= 150 SEC
AVE= 30 MIN
S.E. OF B.F.GOODRICH
N DIR---DEG
N SPD---KM/HR
STANDARD
PPM
CH4
O3
THC
TIME

FIGURE #10

FIGURE #11



WELLAND #4

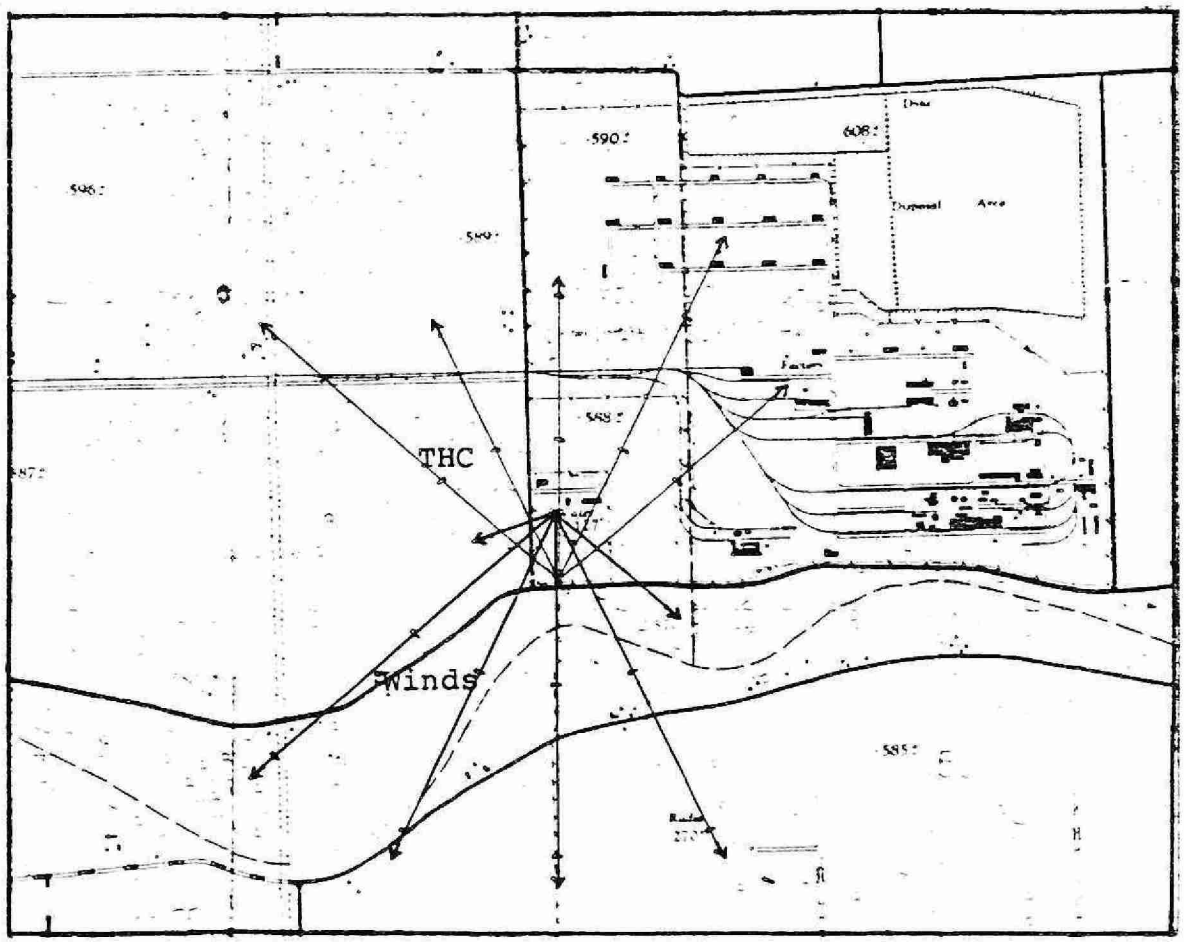
10:39 MAY 17 1978 SCAN= 150 SEC AVE= 30 MIN
LENGTH= 12.1 HRS MINIMUM MEAN= 1 PPM
DELAY= 0 MIN WIND RANGE= 1 , 25 KM/HR
LOC: S. OF B.F.GOODRICH(06487-47671);0.25KM & 180DGS/SOURCE

THOROLD SURVEY - - - 1978

B.F. GOODRICH LTD.

ARITHMETIC MEAN: THC
1 DIV= 1 PPM

WINDS; BLOWING TOWARDS
1 DIV= 10 %



MAP #5

WELLAND #5

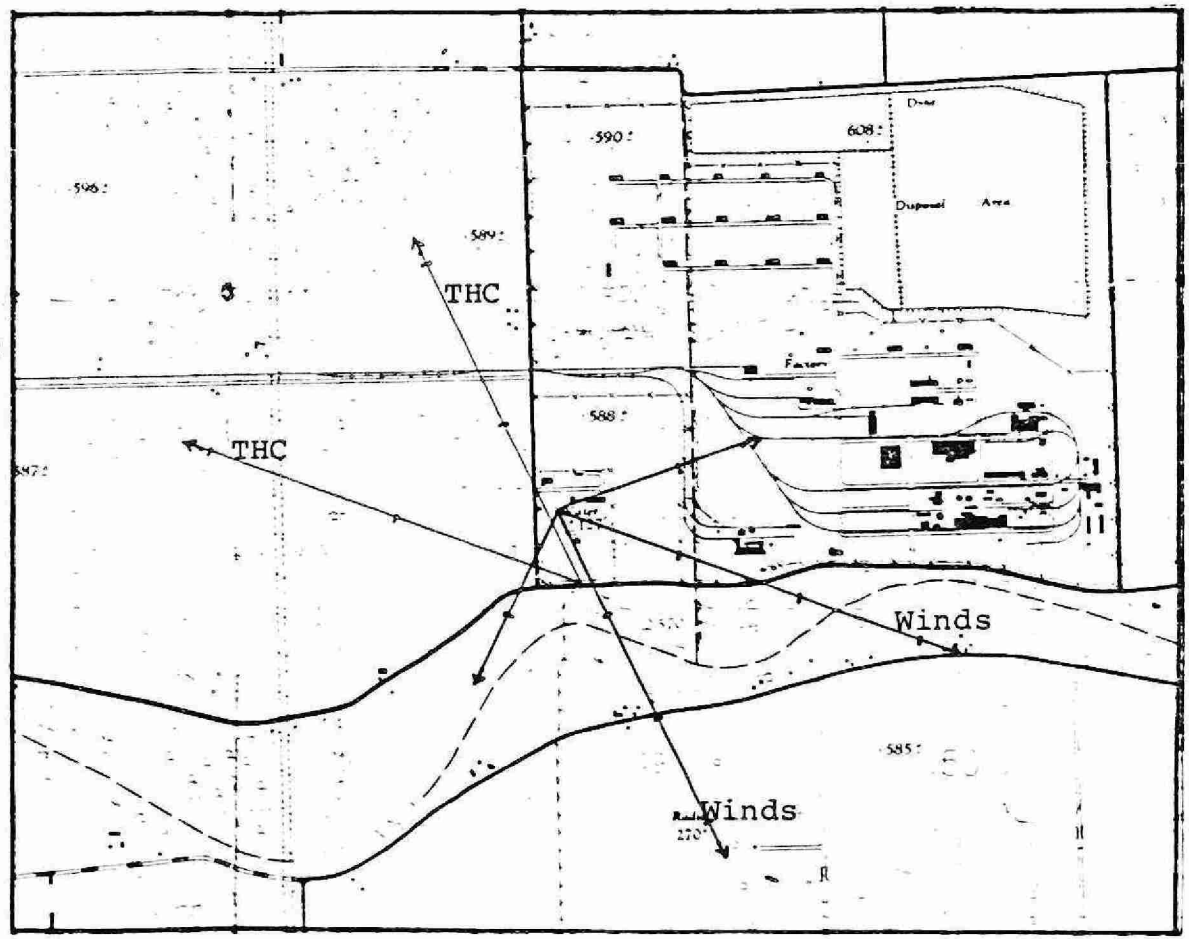
23:53 MAY 17 1978 SCAN= 150 SEC AVE= 30 MIN
LENGTH= 9.7 HRS MINIMUM MEAN= 1 PPM
DELAY= 0 MIN WIND RANGE= 1 , 25 KM/HR
LOC: S. OF B.F.GOODRICH(06488-47671);0.26KM & 170DGS/SOURCE

THOROLD SURVEY - - - 1978

B.F. GOODRICH LTD.

ARITHMETIC MEAN: THC
1 DIV= 1 PPM

WINDS; BLOWING TOWARDS:
1 DIV= 10 %



MAP #6

HI-VOL ANALYSIS FOR WELLAND

TABLE #16

TYPE	FILTER NUMBER	LOCATION DESCRIPTION	DATE 1978	MICROGRAMS/m^3 T.S.P.	Si	Al	PAH MICROGRAMS/1000 m^3 Fluor-anthene	Perylene	Bkf	BaP	B(ghi)P	WIND dir/speed degrees/km/hr
G.F.	025	337 Alberta Street	May 23	188			0.81	1.42	1.02	0.99	1.54	220/05
Del	T1	"			N.D.	0.57						
G.F.	024	"	May 24	188			0.48	0.84	0.15	0.74	2.56	055/06
Del	T2	"			7.1	0.64						
G.F.	023	"	May 25	184			0.41	0.63	0.31	0.81	1.41	285/06
Del	T3	"			5.3	0.76						
G.F.	022	"	May 26	167			0.75	0.81	0.47	0.43	0.07	265/06
Del	T4	"			8.0	0.55						
G.F.	021	"	May 29	133			0.26	0.34	0.29	0.16	0.32	260/05
Del	T5	"			1.2	0.82						
G.F.	20051	"	May 30	116			0.26	0.21	0.19	0.12	0.30	255/06
Del	T6	"			19.2	0.77						
G.F.	20052	"	May 31	179			0.31	0.83	0.23	0.22	0.64	300/12
Del	T7	"			5.3	0.64						
G.F.	20053	"	June 1		Torn Filter - Invalid data							290/06
Del	T8	"			42.0	1.32						

WELLAND #1

DATE: MAY 15 1978
SCAN TIME: 150 SEC
AVERAGING TIME: 30 MIN
LOCATION: S.W. OF B.F.GOODRICH(06485-47671); 0.35KM @ 210DG: SRC

TIME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	OZONE BAROMETER
17:26-----17:56	5.8E-02 9.5E-03 22	1.0E-06 17 62	4.2E-01 93	3.3E-02 989
17:41-----18:11	8.1E-02 6.2E-03 20	7.5E-02 17 59	3.1E-01 99	3.5E-02 989
17:56-----18:26	2.5E-01 5.8E-03 20	2.0E-01 17 52	8.2E-02 102	3.6E-02 989
18:11-----18:41	8.9E-01 5.0E-03 19	5.5E-01 17 48	3.3E-02 102	3.4E-02 989
18:26-----18:56	1.4E+00 3.8E-03 19	8.2E-01 16 49	4.9E-02 102	3.3E-02 989
18:41-----19:11	1.4E+00 3.1E-03 22	8.0E-01 16 48	9.9E-02 106	3.2E-02 989
18:56-----19:26	1.4E+00 2.2E-03 23	7.8E-01 15 51	1.1E-01 113	3.1E-02 989
19:11-----19:41	1.0E+00 3.3E-03 22	6.3E-01 15 54	8.9E-02 120	3.2E-02 990
19:26-----19:56	1.1E+00 5.2E-03 19	7.0E-01 14 52	2.8E-02 128	3.1E-02 990
19:41-----20:11	9.9E-01 3.9E-03 17	6.5E-01 14 52	3.7E-02 136	3.1E-02 990
19:56-----20:26	1.0E+00 1.6E-03 17	6.4E-01 14 51	4.4E-02 141	3.1E-02 990
20:11-----20:41	1.5E+00 7.1E-04 17	9.0E-01 13 54	7.5E-03 144	3.1E-02 990

WILLAND #1, CONT'D

TIME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	OZONE BAROMETER
20:26----20:56	1.4E+00 2.3E-04 16	8.8E-01 13 59	1.8E-06 145	3.0E-02 996
20:41----21:11	1.4E+00 5.3E-05 14	9.0E-01 13 57	1.8E-06 147	2.9E-02 996
20:56----21:26	1.4E+00 2.6E-05 11	9.6E-01 13 52	1.8E-06 150	2.7E-02 996
21:11----21:41	1.4E+00 2.4E-05 11	9.8E-01 13 51	1.8E-06 153	2.5E-02 996
21:26----21:56	1.4E+00 3.0E-05 10	1.0E+00 13 49	1.8E-06 153	2.2E-02 996
21:41----22:11	1.5E+00 3.1E-05 9	1.1E+00 13 45	1.8E-06 153	2.0E-02 996
21:56----22:26	1.5E+00 1.8E-05 10	1.1E+00 12 49	1.8E-06 155	1.7E-02 996
22:11----22:41	1.5E+00 1.2E-05 11	1.1E+00 12 50	1.8E-06 161	1.4E-02 996
22:26----22:56	1.6E+00 1.7E-05 9	1.1E+00 12 42	1.8E-06 166	1.1E-02 996
22:41----23:11	1.5E+00 3.3E-05 9	1.0E+00 12 44	1.3E-01 166	1.0E-02 996
22:56----23:26	1.6E+00 4.0E-05 10	8.2E-01 12 48	7.8E-01 160	8.9E-03 996
23:11----23:41	2.1E+00 3.2E-05 9	8.6E-01 13 47	1.3E+00 155	6.4E-03 996
23:26----23:56	2.1E+00 3.0E-05 10	8.5E-01 13 54	1.3E+00 154	3.5E-03 996
23:41----00:11	2.0E+00 2.9E-05 12	8.3E-01 13 54	1.3E+00 154	1.5E-03 996

WELLAND #1. CONT'D

TIME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	OZONE BAROMETER
23:56-----00:26	2.1E+00 2.8E-05 14	8.5E-01 13 55	1.3E+00 155	5.5E-04 990
00:11-----00:41	2.1E+00 2.7E-05 14	8.6E-01 12 60	1.3E+00 156	1.5E-06 990
00:26-----00:56	2.1E+00 2.2E-05 13	8.6E-01 12 65	1.3E+00 159	1.5E-06 990
00:41-----01:11	2.1E+00 1.7E-05 13	8.6E-01 12 62	1.3E+00 163	1.5E-06 990
00:56-----01:26	2.0E+00 2.0E-05 14	8.5E-01 12 56	1.3E+00 166	1.5E-06 990
01:11-----01:41	2.0E+00 2.0E-05 14	8.3E-01 12 59	1.3E+00 168	1.5E-06 990
01:26-----01:56	2.0E+00 1.7E-05 11	8.5E-01 12 63	1.2E+00 170	1.5E-06 990
01:41-----02:11	2.1E+00 1.7E-05 9	8.7E-01 12 69	1.3E+00 173	1.5E-06 990
01:56-----02:26	2.0E+00 2.3E-05 12	8.5E-01 12 76	1.3E+00 174	1.5E-06 990
02:11-----02:41	1.9E+00 1.8E-05 15	8.0E-01 12 81	1.2E+00 171	1.5E-06 990
02:26-----02:56	1.9E+00 1.3E-05 14	7.7E-01 12 81	1.3E+00 170	1.5E-06 990
02:41-----03:11	1.9E+00 2.0E-05 12	7.8E-01 12 81	1.2E+00 170	1.5E-06 990
02:56-----03:26	1.9E+00 2.6E-05 13	7.7E-01 12 79	1.2E+00 168	3.2E-04 990
03:11-----03:41	1.9E+00 3.1E-05 14	7.7E-01 12 78	1.2E+00 166	3.2E-04 990

WELLAND #1, CONC'D

TIME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	OZONE BAROMETER
02:26----03:56	1.9E+00 2.8E-05 13	7.8E-01 12 78	1.2E+00 164	1.5E-06 990
03:41----04:11	1.9E+00 2.7E-05 11	8.1E-01 12 75	1.2E+00 163	1.5E-06 990
03:56----04:26	1.9E+00 2.8E-05 12	8.0E-01 12 78	1.2E+00 161	1.5E-06 990
04:11----04:41	1.9E+00 2.6E-05 13	8.0E-01 12 74	1.2E+00 159	1.5E-06 991
04:26----04:56	2.0E+00 2.5E-05 11	8.3E-01 12 80	1.2E+00 160	1.6E-04 991
04:41----05:11	2.1E+00 2.6E-05 10	8.8E-01 12 53	1.2E+00 163	1.6E-04 991
04:56----05:26	2.0E+00 2.5E-05 11	8.7E-01 12 56	1.2E+00 166	1.5E-06 991
05:11----05:41	2.0E+00 3.1E-05 12	8.2E-01 12 55	1.2E+00 160	1.5E-06 991
05:26----05:56	2.0E+00 6.4E-05 14	8.2E-01 12 55	1.2E+00 168	1.5E-06 991
05:41----06:11	1.9E+00 1.3E-04 16	8.1E-01 12 57	1.2E+00 168	1.5E-06 991
05:56----06:26	1.9E+00 2.0E-04 16	8.2E-01 12 59	1.2E+00 172	1.5E-06 991
06:11----06:41	2.0E+00 3.6E-04 14	8.2E-01 11 62	1.2E+00 183	1.5E-06 991
06:26----06:56	2.0E+00 6.1E-04 10	8.4E-01 11 65	1.2E+00 196	1.5E-06 992
06:41----07:11	2.0E+00 7.9E-04 10	8.4E-01 11 61	1.2E+00 203	1.5E-06 992

WELLAND #1, CONT'D

TIME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	OZONE BAROMETER
06:56-----07:26	2.0E+00 9.6E-04 10	8.7E-01 11 53	1.2E+00 212	1.5E-06 992
07:11-----07:41	2.2E+00 1.3E-03 8	9.4E-01 11 49	1.2E+00 224	1.5E-06 992
07:26-----07:56	2.2E+00 1.9E-03 9	9.5E-01 11 50	1.3E+00 229	1.5E-06 992
07:41-----08:11	2.1E+00 2.6E-03 10	9.0E-01 11 53	1.2E+00 231	1.5E-06 992
07:56-----08:26	2.1E+00 3.1E-03 8	8.8E-01 11 54	1.2E+00 233	1.5E-06 992
08:11-----08:41	2.1E+00 4.3E-03 6	9.1E-01 11 50	1.2E+00 234	1.5E-06 992
08:26-----08:56	2.2E+00 8.0E-03 6	9.6E-01 11 41	1.2E+00 235	1.5E-06 992
08:41-----09:11	2.2E+00 1.3E-02 7	9.8E-01 12 33	1.2E+00 235	1.5E-06 992

STATISTICS

NUMBER OF READINGS 381

POLLUTANT	MINIMUM VALUE	MAXIMUM VALUE	ARITHMETIC MEAN	STANDARD DEVIATION	GEOMETRIC MEAN	GEOMETRIC STD. D
THC	1.00E-06	2.42E+00	1.71E+00	5.64E-01	8.06E-01	2.42E
THC-CH4	1.00E-06	1.52E+00	8.13E-01	2.39E-01	4.82E-01	1.05E
CH4	1.00E-06	2.02E+00	8.16E-01	5.80E-01	2.25E-02	4.84E
OZONE	1.00E-06	3.62E-02	9.99E-03	1.37E-01	6.76E-05	1.33E
SOLAR RAD	2.08E-06	1.95E-02	1.76E-03	3.54E-01	1.63E-04	1.11E
TEMP	11	18	13	2		
HUMIDITY	87	237	164	35	160	
BAROMETER	989	992	990	1	990	
WIND SPEED	4	27	13	5	12	

WELLAND #2

DATE: MAY 16 1978
SCAN TIME: 150 SEC
AVERAGING TIME: 30 MIN
LOCATION: S.W. OF B.F.GOODRICH(06485-47671):0.3KM & 230DGS/SOURCE

TIME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	OZONE BAROMETER
11:52----12:22	2.0E+00 2.0E-02 15	8.5E-01 16 69	1.1E+00 128	2.9E-02 993
12:07----12:37	1.9E+00 1.9E-02 15	8.2E-01 15 80	1.1E+00 129	2.7E-02 993
12:22----12:52	1.9E+00 3.0E-02 15	8.2E-01 16 71	1.1E+00 124	3.1E-02 993
12:37----13:07	1.9E+00 3.7E-02 14	8.3E-01 17 62	1.1E+00 113	3.3E-02 993
12:52----13:22	1.9E+00 3.7E-02 13	8.1E-01 19 62	1.1E+00 95	3.5E-02 993
13:07----13:37	1.9E+00 4.1E-02 12	8.0E-01 20 68	1.1E+00 77	4.0E-02 993
13:22----13:52	1.9E+00 4.4E-02 13	8.1E-01 20 67	1.2E+00 71	4.2E-02 993
13:37----14:07	1.9E+00 4.5E-02 15	8.2E-01 20 57	1.2E+00 72	4.6E-02 993
13:52----14:22	1.9E+00 4.3E-02 16	8.1E-01 20 60	1.2E+00 71	4.3E-02 993
14:07----14:37	1.9E+00 5.0E-02 16	8.0E-01 20 60	1.2E+00 70	4.1E-02 993
14:22----14:52	1.9E+00 6.4E-02 16	7.9E-01 21 57	1.2E+00 65	4.7E-02 992
14:37----15:07	1.9E+00 6.8E-02 16	8.0E-01 21 55	1.2E+00 60	5.1E-02 992

WELLAND #2, CONT'D

TIME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	OZONE BAROMETER
14:52----15:22	1.9E+00 5.5E-02 19	8.0E-01 21 56	1.2E+00 61	5.0E-02 992
15:07----15:37	1.9E+00 5.9E-02 19	8.0E-01 21 61	1.2E+00 63	4.8E-02 992
15:22----15:52	1.9E+00 5.7E-02 18	8.0E-01 21 60	1.2E+00 62	4.9E-02 992
15:37----16:07	1.9E+00 3.5E-02 18	7.9E-01 20 57	1.2E+00 66	4.8E-02 992
15:52----16:22	1.9E+00 3.2E-02 17	7.8E-01 20 55	1.2E+00 70	4.6E-02 992
16:07----16:37	1.9E+00 4.3E-02 16	7.8E-01 20 59	1.2E+00 69	4.6E-02 992
16:22----16:52	1.9E+00 5.7E-02 17	7.7E-01 20 63	1.2E+00 65	4.8E-02 992
16:37----17:07	2.0E+00 6.0E-02 18	8.7E-01 21 57	1.2E+00 62	5.0E-02 992
16:52----17:22	2.0E+00 3.7E-02 19	8.6E-01 20 52	1.2E+00 66	5.1E-02 992
17:07----17:37	1.8E+00 2.0E-02 18	7.4E-01 19 58	1.2E+00 72	5.1E-02 992
17:22----17:52	1.8E+00 2.9E-02 18	7.2E-01 19 61	1.3E+00 72	5.2E-02 992
17:37----18:07	1.8E+00 2.5E-02 17	7.2E-01 19 59	1.3E+00 72	5.3E-02 992
17:52----18:22	1.9E+00 1.6E-02 14	7.4E-01 19 55	1.3E+00 75	5.2E-02 992
18:07----18:37	1.9E+00 1.2E-02 13	7.4E-01 18 57	1.3E+00 78	5.0E-02 992

WELLAND #2, CONT'D

TIME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	OZONE BAROMETER
18:22-----18:52	1.8E+00 7.7E-03 14	7.3E-01 18 56	1.3E+00 81	5.0E-02 992
18:37-----19:07	1.9E+00 5.6E-03 13	7.5E-01 17 46	1.3E+00 87	4.6E-02 992
18:52-----19:22	1.9E+00 4.8E-03 11	7.8E-01 17 45	1.3E+00 92	4.3E-02 992
19:07-----19:37	1.9E+00 3.9E-03 10	7.7E-01 17 51	1.3E+00 95	4.2E-02 992
19:22-----19:52	2.0E+00 3.7E-03 8	8.0E-01 17 47	1.3E+00 97	4.2E-02 991
19:37-----20:07	2.0E+00 4.4E-03 6	8.1E-01 17 18	1.3E+00 100	3.9E-02 991
19:52-----20:22	1.8E+00 3.9E-03 6	7.3E-01 16 356	1.3E+00 105	3.8E-02 991
20:07-----20:37	1.8E+00 1.8E-03 7	7.2E-01 15 359	1.3E+00 120	3.7E-02 991
20:22-----20:52	1.8E+00 5.4E-04 7	7.2E-01 14 4	1.3E+00 139	3.5E-02 991
20:37-----21:07	1.8E+00 1.4E-04 5	7.5E-01 14 5	1.3E+00 154	3.5E-02 991
20:52-----21:22	1.9E+00 8.0E-06 3	7.7E-01 14 353	1.3E+00 162	3.5E-02 991
21:07-----21:37	2.0E+00 1.2E-05 5	8.0E-01 13 336	1.3E+00 166	2.8E-02 991

STATISTICS

NUMBER OF READINGS 238

POLLUTANT	MINIMUM VALUE	MAXIMUM VALUE	ARITHMETIC MEAN	STANDARD DEVIATION	GEOMETRIC MEAN	GEOMETRIC STD. DEV.
THC	1.77E+00	3.22E+00	1.91E+00	1.41E-01	1.91E+00	1.07E+00
THC-CH4	6.94E-01	1.92E+00	7.89E-01	9.85E-02	7.85E-01	1.10E+00
CH4	1.12E+00	1.34E+00	1.23E+00	5.73E-02	1.23E+00	1.05E+00
OZONE	4.37E-03	5.67E-02	4.18E-02	9.85E-03	4.01E-02	1.41E+00
SOLAR RAD	1.00E-06	9.56E-02	2.74E-02	2.35E-02	8.11E-03	1.64E+01
TEMP	13	22	18	2		
HUMIDITY	56	171	93	33	88	1
BAROMETER	991	993	992	1	992	1
WIND SPEED	1	24	14	5	12	2

WELLAND #3

DATE: MAY 16 1978
SCAN TIME: 150 SEC
AVERAGING TIME: 30 MIN
LOCATION: S.W. OF B.F.GOODRICH(06488-47671):0.26KM @ 170DGS/SOURCE

TIME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	OZONE BAROMETER
22:16----22:46	2.3E+00 1.4E-05 6	9.6E-01 11 336	1.3E+00 199	3.2E-02 991
22:31----23:01	2.3E+00 2.4E-05 8	9.1E-01 11 325	1.2E+00 201	3.4E-02 991
22:46----23:16	2.2E+00 2.4E-05 8	8.7E-01 11 325	1.2E+00 206	3.6E-02 991
23:01----23:31	2.0E+00 2.4E-05 8	8.1E-01 11 325	1.2E+00 213	3.7E-02 991
23:16----23:46	1.9E+00 2.7E-05 9	7.8E-01 12 320	1.1E+00 215	3.8E-02 991
23:31----00:01	1.9E+00 2.7E-05 9	7.8E-01 12 319	1.1E+00 211	3.7E-02 991
23:46----00:16	2.0E+00 2.5E-05 9	8.1E-01 12 319	1.1E+00 212	3.3E-02 990
00:01----00:31	2.2E+00 2.8E-05 7	9.9E-01 13 320	1.1E+00 216	2.5E-02 990
00:16----00:46	2.7E+00 3.1E-05 4	1.2E+00 13 322	1.2E+00 215	1.5E-02 990
00:31----01:01	2.8E+00 2.9E-05 3	1.3E+00 13 330	1.2E+00 215	7.8E-03 990
00:46----01:16	2.4E+00 2.7E-05 6	1.2E+00 13 331	1.2E+00 212	4.8E-03 990
01:01----01:31	2.3E+00 2.5E-05 7	1.1E+00 13 327	1.2E+00 206	4.5E-03 990

WELLAND #3, CONT'D

TIME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	OZONE BAROMETER
01:16----01:46	2.3E+00 2.4E-05 7	1.1E+00 13 322	1.2E+00 201	4.4E-03 990
01:31----02:01	2.4E+00 2.6E-05 8	1.1E+00 13 324	1.2E+00 196	4.9E-03 989
01:46----02:16	2.8E+00 2.9E-05 8	1.4E+00 14 339	1.2E+00 191	6.9E-03 989
02:01----02:31	2.9E+00 2.2E-05 7	1.4E+00 14 339	1.3E+00 183	5.7E-03 989
02:16----02:46	2.7E+00 1.9E-05 7	1.2E+00 13 336	1.3E+00 178	4.4E-03 989
02:31----03:01	2.6E+00 2.2E-05 7	1.2E+00 13 341	1.2E+00 176	8.4E-03 989
02:46----03:16	2.6E+00 2.2E-05 7	1.3E+00 14 340	1.2E+00 173	1.4E-02 989
03:01----03:31	2.6E+00 2.0E-05 8	1.2E+00 14 337	1.2E+00 168	1.8E-02 989
03:16----03:46	2.4E+00 1.6E-05 8	1.1E+00 13 339	1.2E+00 165	1.8E-02 989
03:31----04:01	2.4E+00 1.7E-05 8	1.1E+00 13 340	1.2E+00 165	1.9E-02 989
03:46----04:16	2.6E+00 1.6E-05 6	1.1E+00 13 343	1.2E+00 174	1.9E-02 988
04:01----04:31	2.7E+00 1.3E-05 5	1.2E+00 13 3	1.2E+00 195	2.1E-02 988
04:16----04:46	2.7E+00 1.7E-05 5	1.2E+00 13 15	1.2E+00 212	2.3E-02 988
04:31----05:01	2.5E+00 1.9E-05 6	1.1E+00 12 2	1.2E+00 225	2.8E-02 988

WELLAND #3: CONT'D

TIME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	OZONE BAROMETER
04:46----05:16	2.3E+00 1.9E-05 6	1.1E+00 12 355	1.2E+00 234	3.1E-02 988
05:01----05:31	2.1E+00 2.1E-05 8	9.5E-01 12 12	1.2E+00 236	3.4E-02 988
05:16----05:46	2.1E+00 3.9E-05 10	8.8E-01 11 20	1.1E+00 239	3.6E-02 988
05:31----06:01	2.1E+00 1.3E-04 9	9.1E-01 11 21	1.1E+00 243	3.5E-02 988
05:46----06:16	2.1E+00 4.3E-04 8	9.1E-01 11 21	1.1E+00 245	3.4E-02 988
06:31----06:31	2.0E+00 9.8E-04 8	9.0E-01 11 21	1.1E+00 244	3.3E-02 988
06:16----06:46	2.1E+00 1.6E-03 7	9.5E-01 11 23	1.1E+00 245	3.2E-02 988
06:31----07:01	2.1E+00 2.2E-03 6	9.7E-01 12 31	1.1E+00 248	2.8E-02 989
06:46----07:16	2.0E+00 2.6E-03 6	8.9E-01 12 34	1.1E+00 250	2.6E-02 989
07:01----07:31	2.1E+00 2.9E-03 6	9.2E-01 12 29	1.1E+00 251	2.4E-02 989
07:16----07:46	2.1E+00 3.1E-03 7	8.9E-01 12 27	1.1E+00 256	2.5E-02 989
07:31----08:01	1.9E+00 3.6E-03 9	7.9E-01 12 27	1.1E+00 258	2.6E-02 989
07:46----08:16	2.0E+00 4.6E-03 9	8.2E-01 12 24	1.1E+00 255	2.4E-02 989
08:01----08:31	2.1E+00 7.0E-03 9	9.1E-01 12 21	1.1E+00 254	2.3E-02 989

WELLAND #3, CONT'D

TIME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	OZONE BAROMETER
08:16----08:46	2.1E+00 9.5E-03 9	9.4E-01 12 22	1.1E+00 255	2.3E-02 989
08:31----09:01	2.0E+00 1.4E-02 9	9.1E-01 13 27	1.1E+00 258	2.2E-02 989
08:46----09:16	1.9E+00 1.7E-02 10	8.9E-01 13 28	1.1E+00 256	2.2E-02 989
09:01----09:31	1.9E+00 2.0E-02 10	8.6E-01 14 26	1.1E+00 242	2.3E-02 989
09:16----09:46	1.9E+00 2.2E-02 10	9.8E-01 15 22	1.1E+00 212	2.4E-02 989

STATISTICS

NUMBER OF READINGS 277

POLLUTANT	MINIMUM VALUE	MAXIMUM VALUE	ARITHMETIC MEAN	STANDARD DEVIATION	GEOMETRIC MEAN	GEOMETRIC STD. DEV.
THC	1.78E+00	4.01E+00	2.27E+00	4.38E-01	2.23E+00	1.19E+00
THC-CH4	7.46E-01	2.23E+00	1.02E+00	2.53E-01	9.95E-01	1.24E+00
CH4	1.06E+00	1.30E+00	1.16E+00	6.41E-02	1.16E+00	1.06E+00
OZONE	1.96E-03	3.94E-02	2.28E-02	1.06E-02	1.90E-02	2.03E+00
SOLAR RAD	1.00E-06	2.77E-02	2.73E-03	5.88E-03	1.31E-04	1.47E+01
TEMP	11	15	13	1		
HUMIDITY	163	273	217	29	215	1
BAROMETER	988	991	989	1	989	1
WIND SPEED	0	13	8	2	7	2

WELLAND #4

DATE: MAY 17 1978
SCAN TIME: 150 SEC
AVERAGING TIME: 30 MIN
LOCATION: S. OF B.F.GOODRICH(06487-47671):0.25KM & 180DGS/SOURCE

TIME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	OZONE BAROMETER
10:39----11:09	3.1E+00 2.1E-02 14	1.5E+00 14 12	1.0E+00 177	2.3E-02 990
10:54----11:24	3.1E+00 2.0E-02 15	1.5E+00 14 17	9.9E-01 177	2.3E-02 990
11:09----11:39	3.3E+00 1.5E-02 17	1.6E+00 14 21	9.7E-01 178	2.2E-02 990
11:24----11:54	3.1E+00 1.3E-02 17	1.5E+00 14 22	9.7E-01 183	2.1E-02 990
11:39----12:09	2.7E+00 1.7E-02 14	1.3E+00 14 22	9.6E-01 183	2.0E-02 990
11:54----12:24	2.4E+00 2.2E-02 16	1.1E+00 14 21	9.3E-01 186	1.9E-02 990
12:09----12:39	2.1E+00 2.5E-02 15	9.5E-01 14 27	9.2E-01 183	1.8E-02 990
12:24----12:54	1.9E+00 2.8E-02 11	9.1E-01 15 32	9.1E-01 174	1.8E-02 990
12:39----13:09	1.9E+00 3.1E-02 9	9.0E-01 15 40	9.1E-01 162	1.9E-02 990
12:54----13:24	1.9E+00 3.1E-02 9	8.6E-01 16 53	9.2E-01 155	2.2E-02 990
13:09----13:39	1.9E+00 2.9E-02 9	8.6E-01 17 55	9.3E-01 147	2.9E-02 990
13:24----13:54	1.9E+00 3.2E-02 11	8.4E-01 18 53	9.5E-01 141	3.5E-02 990

WELLAND #4, CONT'D

TIME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	OZONE BAROMETER
13:39----14:09	1.8E+00 3.6E-02 13	8.1E-01 18 52	9.7E-01 136	3.3E-02 990
13:54----14:24	1.8E+00 3.3E-02 14	8.0E-01 18 54	9.8E-01 138	3.0E-02 990
14:09----14:39	1.8E+00 3.2E-02 13	8.0E-01 17 56	1.0E+00 142	2.8E-02 990
14:24----14:54	1.9E+00 2.9E-02 12	8.2E-01 17 51	1.0E+00 141	2.7E-02 990
14:39----15:09	2.0E+00 2.1E-02 10	8.8E-01 17 35	1.0E+00 138	2.5E-02 990
14:54----15:24	2.0E+00 1.6E-02 10	9.2E-01 17 8	1.0E+00 135	1.9E-02 990
15:09----15:39	2.2E+00 2.0E-02 10	9.9E-01 18 351	1.1E+00 131	1.3E-02 991
15:24----15:54	2.3E+00 3.1E-02 10	1.1E+00 18 352	1.1E+00 120	1.5E-02 991
15:39----16:09	2.4E+00 3.9E-02 12	1.1E+00 19 354	1.1E+00 103	1.9E-02 991
15:54----16:24	2.3E+00 3.1E-02 11	1.0E+00 21 355	1.0E+00 82	2.3E-02 990
16:09----16:39	2.1E+00 1.5E-02 11	9.5E-01 22 355	9.8E-01 68	2.6E-02 990
16:24----16:54	1.9E+00 1.1E-02 11	8.9E-01 23 347	9.7E-01 61	2.7E-02 990
16:39----17:09	1.8E+00 1.1E-02 11	8.3E-01 24 344	9.5E-01 56	3.3E-02 990
16:54----17:24	1.8E+00 1.6E-02 11	8.2E-01 24 346	9.3E-01 55	3.6E-02 991

WELLAND #4, CONT'D

TIME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	OZONE BAROMETER
17:09----17:39	1.9E+00 2.2E-02 12	8.4E-01 24 344	9.4E-01 55	3.7E-02 991
17:24----17:54	1.9E+00 2.3E-02 11	8.6E-01 24 348	9.7E-01 56	3.9E-02 991
17:39----18:09	1.9E+00 2.1E-02 11	8.8E-01 22 10	1.0E+00 63	4.5E-02 991
17:54----18:24	2.0E+00 1.6E-02 13	9.0E-01 20 22	1.0E+00 72	4.9E-02 991
18:09----18:39	1.9E+00 9.1E-03 11	8.7E-01 19 23	1.0E+00 78	4.9E-02 991
18:24----18:54	2.0E+00 5.3E-03 11	8.7E-01 19 13	1.0E+00 86	4.3E-02 991
18:39----19:09	2.1E+00 3.7E-03 11	9.2E-01 18 3	1.0E+00 97	3.6E-02 991
18:54----19:24	2.0E+00 2.7E-03 7	9.5E-01 18 10	1.1E+00 107	3.1E-02 991
19:09----19:39	2.0E+00 1.9E-03 2	9.1E-01 17 55	1.1E+00 102	3.8E-02 991
19:24----19:54	1.9E+00 2.1E-03 1	8.5E-01 17 353	1.0E+00 94	4.2E-02 991
19:39----20:09	1.9E+00 2.4E-03 5	8.5E-01 18 334	1.1E+00 103	3.1E-02 992
19:54----20:24	2.1E+00 1.5E-03 6	8.8E-01 17 341	1.1E+00 135	2.2E-02 992
20:09----20:39	2.1E+00 3.8E-04 4	9.2E-01 16 340	1.1E+00 161	2.0E-02 992
20:24----20:54	2.2E+00 7.8E-05 3	9.2E-01 16 340	1.1E+00 172	1.6E-02 992

WELLAND #4, CONT'D

IME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	OZONE BAROMETER
20:39----21:09	2.2E+00 1.6E-05 3	9.0E-01 15 337	1.1E+00 182	1.4E-02 992
20:54----21:24	2.2E+00 3.3E-06 3	1.0E+00 14 336	1.1E+00 185	1.2E-02 992
21:09----21:39	2.5E+00 6.9E-06 2	1.2E+00 14 324	1.1E+00 185	8.5E-03 992
21:24----21:54	2.4E+00 1.0E-05 1	1.1E+00 13 300	1.1E+00 185	6.6E-03 993
21:39----22:09	2.2E+00 1.3E-05 1	1.0E+00 13 312	1.1E+00 188	5.0E-03 993
21:54----22:24	2.4E+00 1.6E-05 1	1.0E+00 13 308	1.1E+00 189	3.9E-03 993
22:09----22:39	2.5E+00 1.7E-05 1	1.2E+00 13 311	1.1E+00 187	6.8E-03 993

STATISTICS

NUMBER OF READINGS 291

POLLUTANT	MINIMUM VALUE	MAXIMUM VALUE	ARITHMETIC MEAN	STANDARD DEVIATION	GEOMETRIC MEAN	GEOMETRIC STD. DEV.
THC	1.70E+00	5.13E+00	2.18E+00	5.03E-01	2.14E+00	1.21E+00
THC-CH4	7.12E-01	2.80E+00	1.00E+00	2.92E-01	9.72E-01	1.27E+00
CH4	8.93E-01	1.18E+00	1.02E+00	6.71E-02	1.02E+00	1.07E+00
OZONE	3.03E-03	5.23E-02	2.47E-02	1.19E-02	2.13E-02	1.85E+00
SOLAR RAD	1.00E-06	5.76E-02	1.54E-02	1.29E-02	3.42E-03	2.02E+01
TEMP	13	25	17	3		
HUMIDITY	48	193	134	46	125	2
BAROMETER	990	993	991	1	991	1
WIND SPEED	0	22	9	5	6	4

WELLAND #5

DATE: MAY 17 1978
SCAN TIME: 150 SEC
AVERAGING TIME: 30 MIN
LOCATION: S. OF B.F.GOODRICH(06488-47671):0.26KM & 170DGS/SOURCE

TIME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	OZONE BAROMETER
23:53----00:23	2.2E+00 1.2E-06 1	1.0E+00 11 300	1.1E+00 158	1.6E-02 993
00:08----00:38	2.2E+00 2.6E-06 0	9.8E-01 11 118	1.1E+00 160	1.4E-02 993
00:23----00:53	2.1E+00 5.9E-06 0	9.0E-01 11 99	1.1E+00 162	1.3E-02 993
00:38----01:08	2.1E+00 9.2E-06 1	9.4E-01 10 15	1.1E+00 169	1.2E-02 993
00:53----01:23	2.1E+00 1.7E-05 2	9.4E-01 9 13	1.1E+00 185	1.1E-02 993
01:08----01:38	2.4E+00 2.5E-05 1	1.1E+00 9 9	1.1E+00 197	8.9E-03 993
01:23----01:53	2.5E+00 2.8E-05 0	1.2E+00 10 1	1.1E+00 196	7.2E-03 993
01:38----02:08	2.3E+00 2.4E-05 0	1.0E+00 10 254	1.1E+00 186	8.3E-03 993
01:53----02:23	2.0E+00 2.0E-05 0	8.9E-01 11 266	1.1E+00 177	8.5E-03 993
02:08----02:38	2.0E+00 2.0E-05 1	8.8E-01 11 287	1.1E+00 175	6.9E-03 994
02:23----02:53	2.0E+00 2.0E-05 1	8.8E-01 11 302	1.1E+00 175	5.0E-03 994
02:38----03:08	2.1E+00 1.9E-05 2	8.9E-01 11 326	1.1E+00 173	4.9E-03 994

WELLAND #5, CONT'D

TIME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	OZONE BAROMETER
02:53----03:23	2.3E+00 1.7E-05 3	9.4E-01 11 339	1.1E+00 171	8.8E-03 994
03:08----03:38	2.2E+00 1.6E-05 3	9.5E-01 11 345	1.1E+00 171	1.3E-02 994
03:23----03:53	2.1E+00 1.6E-05 3	9.3E-01 10 347	1.1E+00 172	1.7E-02 994
03:38----04:08	2.0E+00 1.9E-05 2	9.2E-01 10 349	1.1E+00 175	1.8E-02 994
03:53----04:23	2.4E+00 2.5E-05 0	1.1E+00 10 342	1.1E+00 178	1.4E-02 994
04:08----04:38	2.6E+00 2.5E-05 0	1.2E+00 11 71	1.1E+00 176	1.2E-02 994
04:23----04:53	2.4E+00 2.2E-05 0	1.1E+00 11 33	1.1E+00 173	1.2E-02 994
04:38----05:08	2.1E+00 1.9E-05 0	9.6E-01 11 74	1.1E+00 169	1.1E-02 994
04:53----05:23	2.5E+00 2.0E-05 0	1.1E+00 12 90	1.1E+00 168	8.7E-03 994
05:08----05:38	2.5E+00 3.0E-05 0	1.1E+00 12 224	1.1E+00 174	6.9E-03 995
05:23----05:53	2.0E+00 8.1E-05 0	9.2E-01 12 227	1.1E+00 177	5.2E-03 995
05:38----06:08	2.1E+00 3.2E-04 0	9.8E-01 12 228	1.1E+00 179	4.3E-03 995
05:53----06:23	2.2E+00 8.7E-04 0	9.6E-01 12 245	1.1E+00 178	5.5E-03 995
06:08----06:38	2.4E+00 1.2E-03 0	1.0E+00 12 228	1.1E+00 176	5.6E-03 995

WELLAND #5, CONT'D

TIME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	OZONE BAROMETER
06:23----06:53	2.6E+00 1.6E-03 0	1.1E+00 12 228	1.1E+00 177	4.7E-03 995
06:38----07:08	2.3E+00 2.0E-03 0	1.0E+00 12 254	1.1E+00 179	4.0E-03 995
06:53----07:23	2.1E+00 2.5E-03 1	9.4E-01 13 257	1.1E+00 177	4.3E-03 996
07:08----07:38	2.2E+00 3.2E-03 1	9.7E-01 13 256	1.1E+00 178	5.7E-03 996
07:23----07:53	2.3E+00 4.4E-03 1	1.0E+00 13 255	1.1E+00 178	6.0E-03 996
07:38----08:08	2.2E+00 6.0E-03 2	1.0E+00 13 271	1.1E+00 172	5.8E-03 996
07:53----08:23	2.3E+00 7.9E-03 1	1.1E+00 14 283	1.1E+00 163	5.8E-03 996
08:08----08:38	2.2E+00 1.1E-02 0	1.1E+00 14 267	1.1E+00 155	5.8E-03 996
08:23----08:53	2.2E+00 1.5E-02 0	9.6E-01 15 262	1.1E+00 145	7.7E-03 996
08:38----09:08	2.2E+00 1.8E-02 1	9.8E-01 16 283	1.1E+00 133	1.0E-02 996
08:53----09:23	2.1E+00 1.9E-02 1	9.6E-01 17 270	1.1E+00 126	1.2E-02 996
09:08----09:38	2.2E+00 2.1E-02 1	1.1E+00 17 245	1.1E+00 122	1.4E-02 996

STATISTICS

NUMBER OF READINGS 234

POLLUTANT	MINIMUM VALUE	MAXIMUM VALUE	ARITHMETIC MEAN	STANDARD DEVIATION	GEOMETRIC MEAN	GEOMETRIC STD. DEV
THC	1.83E+00	4.42E+00	2.22E+00	4.55E-01	2.19E+00	1.19E+00
THC-CH4	7.82E-01	2.35E+00	1.01E+00	2.35E-01	9.85E-01	1.21E+00
CH4	1.02E+00	1.18E+00	1.10E+00	2.95E-02	1.10E+00	1.03E+00
OZONE	1.93E-03	2.02E-02	9.26E-03	4.38E-03	8.24E-03	1.64E+00
SOLAR RAD	1.00E-06	2.86E-02	8.24E-03	6.34E-03	7.38E-04	2.04E+00
TEMP	9	18	12	2		
HUMIDITY	114	200	169	17	168	1
BAROMETER	993	997	995	1	995	1
WIND SPEED	0	6	1	1	0	18

WELLAND #6

DATE: MAY 23 1978
SCAN TIME: 150 SEC
AVERAGING TIME: 30 MIN
LOCATION: E. OF B.F.GOODRICH(06498-47671);1.0KM & 110DGS/SOURCE

TIME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	OZONE BAROMETER
16:12----16:42	2.0E+00 5.1E-02 8	8.6E-01 28 255	1.1E+00 13	6.9E-02 994
16:17----16:47	2.0E+00 5.2E-02 8	8.6E-01 28 256	1.1E+00 14	7.0E-02 994
16:22----16:52	2.0E+00 5.2E-02 9	8.5E-01 28 263	1.1E+00 14	7.1E-02 994
16:27----16:57	1.9E+00 5.1E-02 9	8.1E-01 28 265	1.1E+00 13	7.2E-02 994
16:32----17:02	1.7E+00 5.1E-02 9	7.0E-01 28 269	1.0E+00 13	7.3E-02 994

STATISTICS

NUMBER OF READING: 20

POLLUTANT	MINIMUM VALUE	MAXIMUM VALUE	ARITHMETIC MEAN	STANDARD DEVIATION	GEOMETRIC MEAN	GEOMETRIC STD. DEV.
THC	1.00E-06	2.77E+00	1.84E+00	4.99E-01	9.31E-01	2.55E+01
THC-CH4	1.00E-06	1.22E+00	7.80E-01	2.24E-01	4.11E-01	2.10E+01
CH4	1.00E-06	1.16E+00	1.07E+00	2.54E-01	5.61E-01	2.26E+01
OZONE	6.25E-02	8.10E-02	7.15E-02	4.27E-03	7.13E-02	1.06E+00
SOLAR RAD	4.37E-02	5.79E-02	5.17E-02	3.78E-03	5.16E-02	1.08E+00
TEMP	28	29	28	0		
HUMIDITY	12	14	13	1	13	1
BAROMETER	993	994	994	0	994	1
WIND SPEED	5	13	9	2	9	1

WELLAND #7

DATE: MAY 23 1978
SCAN TIME: 150 SEC
AVERAGING TIME: 30 MIN
LOCATION: E. OF B.F.GOODRICH(06498-47671):1.0KM & 110DGS/SOURCE

TIME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	OZONE BAROMETER
17:21----17:51	5.9E-01 3.4E-02 7	2.2E-01 28 262	4.7E-01 13	7.4E-02 993
17:31----18:01	5.8E-01 3.6E-02 8	2.1E-01 28 261	4.8E-01 12	7.8E-02 993
17:41----18:11	5.7E-01 3.6E-02 7	2.0E-01 28 257	4.8E-01 10	8.1E-02 993
17:51----18:21	6.0E-01 3.5E-02 7	2.1E-01 28 258	4.7E-01 10	8.2E-02 993
18:01----18:31	5.9E-01 2.8E-02 7	2.1E-01 28 258	4.6E-01 11	8.3E-02 993
18:11----18:41	5.9E-01 2.5E-02 7	2.1E-01 27 259	4.5E-01 12	8.5E-02 993
18:21----18:51	5.6E-01 2.2E-02 6	2.1E-01 27 254	4.4E-01 13	8.6E-02 993
18:31----19:01	6.4E-01 2.1E-02 4	2.3E-01 27 245	4.3E-01 14	8.3E-02 993
18:41----19:11	8.1E-01 1.5E-02 3	3.6E-01 26 218	4.3E-01 19	6.8E-02 993
18:51----19:21	1.2E+00 1.0E-02 3	6.4E-01 25 198	4.5E-01 23	5.3E-02 993
19:01----19:31	1.5E+00 7.1E-03 3	8.5E-01 23 192	4.5E-01 27	4.1E-02 993
19:11----19:41	1.8E+00 6.4E-03 2	9.8E-01 22 196	4.4E-01 27	4.0E-02 993

ELLMND #7, CONT'D

TIME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	OZONE BAROMETER
9:21----19:51	1.5E+00 5.6E-03 2	7.6E-01 21 214	3.9E-01 27	4.4E-02 994
9:31----20:01	1.3E+00 4.4E-03 2	6.3E-01 20 223	3.5E-01 30	4.4E-02 994
9:41----20:11	8.9E-01 3.3E-03 2	4.3E-01 19 215	3.0E-01 35	4.7E-02 994
9:51----20:21	1.2E+00 2.4E-03 2	6.4E-01 19 207	3.0E-01 38	4.2E-02 994
0:01----20:31	1.9E+00 1.6E-03 1	1.1E+00 18 198	3.2E-01 40	3.5E-02 994
0:11----20:41	2.7E+00 9.6E-04 1	1.5E+00 18 203	3.3E-01 41	2.8E-02 994
0:21----20:51	2.6E+00 4.3E-04 0	1.4E+00 18 205	3.0E-01 43	2.6E-02 994

STATISTICS

UMBER OF READINGS 86

OLLUTANT	MINIMUM VALUE	MAXIMUM VALUE	ARITHMETIC MEAN	STANDARD DEVIATION	GEOMETRIC MEAN	GEOMETRIC STD. DEV.
HC	5.51E-01	4.66E+00	1.16E+00	9.75E-01	9.21E-01	1.80E+00
HC-CH4	1.98E-01	3.32E+00	5.74E-01	5.60E-01	4.12E-01	2.15E+00
H4	1.78E-01	5.24E-01	3.99E-01	8.79E-02	3.87E-01	1.29E+00
ZONE	1.28E-02	9.09E-02	5.78E-02	2.28E-02	5.27E-02	1.50E+00
OLAR RAD	2.37E-05	4.09E-02	1.53E-02	1.39E-02	6.19E-03	6.36E+00
EMP	17	29	24	4		
UMIDITY	9	48	24	13	21	2
AROMETER	993	994	993	0	993	1
IND SPEED	0	10	4	3	2	3

WELLAND #8

DATE: MAY 23 1978
SCAN TIME: 150 SEC
AVERAGING TIME: 30 MIN
LOCATION: E. OF B.F.GOODRICH(06498-47671);1.0KM & 110DGS/SOURCE

TIME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	OZONE BAROMETER
21:09-----21:39	2.2E+00 3.9E-06 0	1.3E+00 17 217	2.8E-01 56	2.6E-02 994
21:24-----21:54	2.4E+00 6.2E-06 0	1.2E+00 16 213	2.8E-01 61	3.0E-02 994
21:39-----22:09	2.2E+00 9.6E-06 0	1.2E+00 16 216	3.0E-01 64	2.9E-02 994
21:54-----22:24	1.8E+00 1.6E-05 0	1.0E+00 15 225	3.0E-01 71	2.2E-02 994
22:09-----22:39	3.0E+00 1.8E-05 0	1.8E+00 15 228	3.8E-01 76	1.2E-02 994
22:24-----22:54	3.5E+00 1.2E-05 0	2.1E+00 15 36	4.1E-01 77	1.2E-02 994
22:39-----23:09	3.6E+00 1.4E-05 0	2.2E+00 15 56	4.2E-01 79	9.4E-03 994
22:54-----23:24	3.9E+00 1.4E-05 0	2.2E+00 15 77	4.4E-01 79	9.1E-03 994
23:09-----23:39	3.5E+00 7.8E-06 0	1.9E+00 15 65	4.2E-01 80	1.3E-02 994
23:24-----23:54	3.0E+00 5.7E-06 0	1.5E+00 14 32	3.8E-01 91	1.1E-02 994
23:39----- -00:09	2.6E+00 7.9E-06 0	1.2E+00 14 145	3.3E-01 109	1.0E-02 994
23:54-----00:24	2.4E+00 1.4E-05 0	1.4E+00 14 144	4.9E-01 119	1.3E-02 994

WETLAND #8, CONT'D

TIME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	OZONE BAROMETER
00:09-----00:39	1.8E+00 2.2E-05 0	1.2E+00 14 136	5.2E-01 121	1.3E-02 994
00:24-----00:54	2.2E+00 2.4E-05 0	1.1E+00 14 134	5.3E-01 124	1.2E-02 994
00:39-----01:09	2.4E+00 2.2E-05 0	1.1E+00 14 124	5.6E-01 126	1.3E-02 993
00:54-----01:24	2.3E+00 2.1E-05 0	1.1E+00 14 133	6.0E-01 127	1.3E-02 993
01:09-----01:39	2.4E+00 1.9E-05 0	1.1E+00 14 130	6.3E-01 129	1.3E-02 993
01:24-----01:54	3.8E+00 2.1E-05 0	1.6E+00 14 301	6.6E-01 130	1.1E-02 993
01:39-----02:09	4.3E+00 2.2E-05 0	1.9E+00 14 291	6.3E-01 126	1.1E-02 993
01:54-----02:24	3.3E+00 2.0E-05 0	1.5E+00 14 291	5.6E-01 124	1.0E-02 993
02:09-----02:39	2.7E+00 1.6E-05 0	1.2E+00 14 285	5.6E-01 125	5.3E-03 993
02:24-----02:54	2.4E+00 1.5E-05 0	1.2E+00 14 260	5.8E-01 130	1.5E-03 993
02:39-----03:09	2.6E+00 1.9E-05 1	1.4E+00 14 101	5.6E-01 134	2.4E-04 993
02:54-----03:24	1.8E+00 2.3E-05 1	1.2E+00 13 97	4.9E-01 130	3.5E-04 993
03:09-----03:39	1.8E+00 2.5E-05 1	1.3E+00 14 42	4.6E-01 125	5.8E-04 993
03:24-----03:54	2.1E+00 2.8E-05 0	1.2E+00 14 4	4.2E-01 122	8.7E-04 993

WELLANI #8, CONT'D

TIME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	BARONETRIC
03:39-----04:09	2.5E+00 1.9E-05 0	1.3E+00 14 186	4.4E-01 124	4.3E-04 993
03:54-----04:24	2.4E+00 1.0E-05 1	1.5E+00 14 120	5.3E-01 133	1.9E-05 993
04:09-----04:39	3.1E+00 1.5E-05 1	1.6E+00 13 120	6.0E-01 135	9.0E-05 993
04:24-----04:54	3.2E+00 2.1E-05 0	1.6E+00 14 117	5.9E-01 132	1.4E-04 993
04:39-----05:09	3.1E+00 2.3E-05 0	1.8E+00 14 264	5.0E-01 132	2.3E-04 993
04:54-----05:24	3.5E+00 2.3E-05 0	1.9E+00 14 240	5.9E-01 130	1.8E-04 993
05:09-----05:39	2.3E+00 4.7E-05 1	1.1E+00 14 15	5.1E-01 125	4.8E-05 993
05:24-----05:54	1.6E+00 1.7E-04 2	8.1E-01 14 17	4.8E-01 118	7.8E-05 993
05:39-----06:09	1.6E+00 6.4E-04 2	8.3E-01 14 14	5.0E-01 111	3.2E-04 993
05:54-----06:24	2.3E+00 2.0E-03 1	1.1E+00 15 7	5.7E-01 111	7.4E-04 993
06:09-----06:39	2.4E+00 3.8E-03 4	1.2E+00 15 5	6.3E-01 114	1.2E-03 993
06:24-----06:54	1.8E+00 5.1E-03 5	9.1E-01 15 14	6.1E-01 111	2.2E-03 993
06:39-----07:09	1.5E+00 5.7E-03 7	7.9E-01 16 28	5.3E-01 97	4.7E-03 993
06:54-----07:24	1.3E+00 7.0E-03 7	6.9E-01 17 28	4.7E-01 82	6.9E-03 993

TIME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	OZONE BAROMETER
07:09-----07:39	1.4E+00 9.5E-03 6	6.7E-01 18 33	5.0E-01 73	7.4E-03 993
07:24-----07:54	1.7E+00 1.2E-02 8	8.1E-01 19 52	7.3E-01 66	9.9E-03 993
07:39-----08:09	1.9E+00 1.6E-02 10	8.8E-01 20 59	9.0E-01 63	1.4E+02 993
07:54-----08:24	1.7E+00 1.9E-02 11	7.7E-01 20 60	7.9E-01 60	1.7E-02 993

STATISTICS

NUMBER OF READINGS 271

POLLUTANT	MINIMUM VALUE	MAXIMUM VALUE	ARITHMETIC MEAN	STANDARD DEVIATION	GEOMETRIC MEAN	GEOMETRIC STD. DEV.
THC	7.29E-01	1.22E+01	2.46E+00	1.77E+00	2.06E+00	1.76E+00
THC-CH4	4.25E-01	5.04E+00	1.30E+00	9.41E-01	1.07E+00	1.79E+00
CH4	1.88E-01	1.07E+00	5.17E-01	1.67E-01	4.90E-01	1.39E+00
OZONE	1.00E-06	3.70E-02	8.60E-03	8.82E-03	1.59E-03	2.31E+01
SOLAR RAD	1.00E-06	2.48E-02	2.14E-03	5.03E-03	6.12E-05	1.50E+01
TEMP	13	21	15	2		
HUMIDITY	53	140	105	27	100	1
BAROMETER	992	994	993	1	993	1
WIND SPEED	0	15	2	3	0	30

WELLAND #9

DATE: MAY 24 1978
SCAN TIME: 150 SEC
AVERAGING TIME: 30 MIN
LOCATION: S.W. OF B.F.GOODRICH(06485-47671);0.3KM & 220DGS-SOURCE

TIME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	OZONE BAROMETER
11:59----12:29	2.8E+00 8.1E-02 15	1.1E+00 26 354	1.8E+00 40	6.3E-02 990
12:14----12:44	2.9E+00 8.1E-02 16	1.2E+00 26 0	1.7E+00 41	6.8E-02 993
12:29----12:59	2.8E+00 8.3E-02 16	1.2E+00 27 2	1.7E+00 42	7.0E-02 993
12:44----13:14	2.8E+00 7.4E-02 14	1.3E+00 27 2	1.6E+00 41	7.1E-02 993
12:59----13:29	2.7E+00 7.4E-02 11	1.2E+00 27 13	1.6E+00 40	7.2E-02 993
13:14----13:44	2.5E+00 8.3E-02 12	1.0E+00 28 8	1.6E+00 38	7.3E-02 993
13:29----13:59	2.6E+00 6.9E-02 16	1.1E+00 28 359	1.6E+00 39	7.2E-02 993
13:44----14:14	2.6E+00 7.0E-02 14	1.1E+00 28 11	1.6E+00 35	7.5E-02 993
13:59----14:29	2.6E+00 7.7E-02 12	1.1E+00 28 17	1.5E+00 17	7.6E-02 993
14:14----14:44	2.5E+00 7.4E-02 11	1.1E+00 29 22	1.5E+00 27	7.5E-02 993
14:29----14:59	2.4E+00 6.0E-02 12	1.0E+00 29 11	1.5E+00 94	7.7E-02 993
14:44----15:14	2.6E+00 3.9E-02 16	1.1E+00 27 354	1.5E+00 80	7.7E-02 993

TIME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	OZONE BAROMETER
14:59----15:29	2.6E+00 3.1E-02 19	1.1E+00 26 357	1.5E+00 28	7.6E-02 993
15:14----15:44	2.4E+00 2.8E-02 22	1.1E+00 26 2	1.5E+00 66	7.9E-02 993
15:29----15:59	2.5E+00 4.8E-02 21	1.1E+00 26 3	1.5E+00 60	8.3E-02 993
15:44----16:14	2.6E+00 6.7E-02 20	1.1E+00 26 4	1.5E+00 11	8.5E-02 993
15:59----16:29	2.6E+00 5.5E-02 19	1.1E+00 27 360	1.5E+00 0	8.8E-02 993
16:14----16:44	2.5E+00 3.1E-02 17	1.1E+00 27 359	1.5E+00 0	9.2E-02 993
16:29----16:59	2.6E+00 1.5E-02 17	1.1E+00 27 6	1.5E+00 0	9.5E-02 993
16:44----17:14	2.6E+00 1.4E-02 17	1.1E+00 27 5	1.5E+00 0	9.6E-02 993
16:59----17:29	2.5E+00 1.3E-02 18	1.0E+00 26 2	1.5E+00 0	9.5E-02 993
17:14----17:44	2.5E+00 1.2E-02 16	1.1E+00 26 3	1.5E+00 0	8.7E-02 993
17:29----17:59	2.4E+00 1.2E-02 17	1.1E+00 26 359	1.4E+00 0	8.2E-02 993
17:44----18:14	2.4E+00 1.1E-02 17	1.0E+00 25 1	1.4E+00 0	8.0E-02 993
17:59----18:29	2.5E+00 9.8E-03 15	1.1E+00 25 5	1.4E+00 0	7.7E-02 993
18:14----18:44	2.6E+00 8.7E-03 14	1.1E+00 25 2	1.4E+00 0	7.6E-02 993

TIME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	CLOUD BAROMETER
18:29----18:59	2.7E+00 7.7E-03 13	1.2E+00 25 359	1.4E+00 0	7.6E-02 99
18:44----19:14	2.8E+00 6.8E-03 11	1.3E+00 24 360	1.4E+00 0	7.6E-02 994
18:59----19:29	2.5E+00 5.8E-03 11	1.1E+00 24 357	1.4E+00 0	7.5E-02 994
19:14----19:44	2.6E+00 4.8E-03 10	1.2E+00 23 357	1.4E+00 0	7.2E-02 994
19:29----19:59	3.2E+00 3.8E-03 7	1.6E+00 23 2	1.4E+00 0	6.2E-02 994
19:44----20:14	3.4E+00 2.8E-03 6	1.5E+00 22 0	1.4E+00 0	5.6E-02 994
19:59----20:29	3.0E+00 1.8E-03 6	1.2E+00 21 355	1.4E+00 0	5.8E-02 994
20:14----20:44	2.6E+00 9.6E-04 5	1.1E+00 20 351	1.4E+00 0	5.7E-02 994
20:29----20:59	2.5E+00 3.4E-04 5	1.1E+00 20 351	1.4E+00 0	5.6E-02 994
20:44----21:14	3.1E+00 7.2E-05 2	1.5E+00 19 354	1.5E+00 4	4.8E-02 994
20:59----21:29	3.9E+00 6.6E-06 0	1.9E+00 19 2	1.5E+00 11	3.5E-02 994
21:14----21:44	4.8E+00 2.9E-06 0	2.3E+00 18 151	1.6E+00 19	2.8E-02 994
21:29----21:59	3.9E+00 3.1E-06 1	1.9E+00 18 303	1.5E+00 25	3.2E-02 994
21:44----22:14	3.0E+00 3.7E-06 1	1.4E+00 17 303	1.5E+00 32	2.8E-02 994

WELLAND #9, CONT'D

TIME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	OZONE BAROMETER
21:59-----22:29	4.0E+00 3.6E-06 0	2.0E+00 16 111	1.7E+00 41	1.4E-02 994
22:14-----22:44	3.7E+00 2.1E-06 0	1.7E+00 16 96	1.7E+00 48	1.0E-02 994
22:29-----22:59	3.3E+00 4.2E-06 0	1.5E+00 15 42	1.6E+00 54	1.2E-02 994
22:44-----23:14	4.4E+00 1.0E-05 0	2.1E+00 15 43	1.7E+00 59	7.1E-03 994
22:59-----23:29	5.3E+00 1.3E-05 0	2.5E+00 15 60	1.8E+00 61	2.4E-03 994
23:14-----23:44	4.6E+00 1.2E-05 0	2.2E+00 15 90	1.7E+00 65	4.8E-03 995
23:29-----23:59	4.5E+00 1.2E-05 0	2.1E+00 15 178	1.7E+00 69	3.4E-03 995
23:44-----00:14	4.2E+00 1.1E-05 0	1.9E+00 14 192	1.8E+00 69	8.4E-04 995
23:59-----00:29	3.5E+00 1.1E-05 0	1.5E+00 14 339	1.7E+00 69	1.8E-03 995
00:14-----00:44	4.0E+00 1.7E-05 0	2.0E+00 14 346	1.7E+00 74	1.7E-03 995
00:29-----00:59	4.0E+00 2.2E-05 2	2.0E+00 14 355	1.7E+00 78	1.1E-03 995
00:44-----01:14	4.0E+00 2.6E-05 3	1.9E+00 14 356	1.7E+00 77	8.3E-04 995
00:59-----01:29	4.2E+00 2.2E-05 3	2.0E+00 15 357	1.8E+00 75	3.5E-04 995
01:14-----01:44	4.8E+00 1.5E-05 2	2.3E+00 15 359	1.8E+00 70	2.9E-04 994

TIME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	OZONE BAROMETER
01:29-----01:59	4.3E+00 7.4E-06 1	2.0E+00 15 0	1.8E+00 62	3.0E-04 995
01:44-----02:14	4.0E+00 7.4E-06 0	1.9E+00 14 342	1.8E+00 59	3.2E-04 995
01:59-----02:29	4.9E+00 1.2E-05 0	2.4E+00 14 44	1.8E+00 66	3.8E-04 995
02:14-----02:44	4.8E+00 1.3E-05 0	2.3E+00 13 45	1.8E+00 69	3.2E-04 995
02:29-----02:59	5.2E+00 1.6E-05 0	2.4E+00 13 50	1.9E+00 73	2.8E-04 995
02:44-----03:14	5.4E+00 2.1E-05 0	2.6E+00 13 88	1.9E+00 79	3.1E-04 995
02:59-----03:29	4.3E+00 1.5E-05 0	2.1E+00 13 95	1.8E+00 78	3.0E-04 995
03:14-----03:44	3.9E+00 7.8E-06 0	1.9E+00 13 293	1.9E+00 72	3.2E-04 995
03:29-----03:59	4.0E+00 1.6E-05 1	2.0E+00 13 295	1.9E+00 74	2.7E-04 995
03:44-----04:14	4.1E+00 1.9E-05 1	2.0E+00 13 295	1.9E+00 81	2.8E-04 995
03:59-----04:29	3.8E+00 1.0E-05 0	1.8E+00 13 200	1.9E+00 79	2.7E-04 995
04:14-----04:44	4.3E+00 9.4E-06 1	1.7E+00 12 191	1.8E+00 75	3.1E-04 995
04:29-----04:59	5.1E+00 1.4E-05 0	2.1E+00 12 195	1.8E+00 78	3.1E-04 995
04:44-----05:14	4.6E+00 1.9E-05 0	2.1E+00 12 195	1.8E+00 80	3.1E-04 995

TIME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	OZONE BAROMETER
04:59-----05:29	4.9E+00 2.9E-05 0	2.5E+00 12 266	1.8E+00 80	3.0E-04 995
05:14-----05:44	5.6E+00 1.1E-04 0	2.8E+00 12 266	1.9E+00 78	3.5E-04 996
05:29-----05:59	4.5E+00 4.2E-04 0	2.0E+00 12 52	1.8E+00 78	5.4E-04 996
05:44-----06:14	4.2E+00 1.2E-03 0	2.0E+00 12 30	1.9E+00 76	9.3E-04 996
05:59-----06:29	4.2E+00 2.6E-03 0	2.1E+00 12 259	1.8E+00 75	1.5E-03 996
06:14-----06:44	3.9E+00 4.7E-03 0	1.8E+00 13 242	1.8E+00 77	1.9E-03 996
06:29-----06:59	4.7E+00 7.3E-03 0	2.2E+00 13 244	1.9E+00 73	2.2E-03 996
06:44-----07:14	4.5E+00 8.4E-03 1	2.1E+00 14 282	1.9E+00 68	4.9E-03 996
06:59-----07:29	3.9E+00 1.2E-02 1	1.7E+00 15 283	1.9E+00 61	8.0E-03 996
07:14-----07:44	3.7E+00 1.8E-02 0	1.7E+00 16 286	1.8E+00 48	1.1E-02 996
07:29-----07:59	3.0E+00 2.3E-02 0	1.3E+02 18 274	1.6E+00 32	1.6E-02 996
07:44-----08:14	3.1E+00 2.7E-02 0	1.3E+02 20 262	1.6E+00 14	1.9E-02 997
07:59-----08:29	3.3E+00 3.1E-02 0	1.5E+00 22 290	1.5E+00 3	1.9E-02 997
08:14-----08:44	3.8E+00 3.5E-02 1	1.7E+00 23 299	1.5E+00 0	2.5E-02 997

WELLAND #9, CONT'D

TIME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	OZONE BAROMETER
03:29----08:59	3.6E+00 3.9E-02 2	1.7E+00 25 302	1.5E+00 0	3.5E-02 997
08:44----09:14	3.1E+00 4.4E-02 4	1.6E+00 26 324	1.5E+00 0	4.5E-02 997
08:59----09:29	3.2E+00 4.9E-02 6	1.6E+00 26 336	1.5E+00 0	5.2E-02 997
09:14----09:44	3.2E+00 5.3E-02 6	1.4E+00 25 345	1.5E+00 0	5.6E-02 997
09:29----09:59	3.6E+00 5.7E-02 4	1.7E+00 26 338	1.6E+00 0	5.3E-02 997
09:44----10:14	3.9E+00 6.0E-02 3	1.9E+00 27 314	1.6E+00 0	5.2E-02 997
09:59----10:29	3.3E+00 6.4E-02 4	1.4E+00 28 323	1.5E+00 0	6.5E-02 997

STATISTICS

NUMBER OF READINGS 545

POLLUTANT	MINIMUM VALUE	MAXIMUM VALUE	ARITHMETIC MEAN	STANDARD DEVIATION	GEOMETRIC MEAN	GEOMETRIC STD. DEV.
THC	2.14E+00	9.78E+00	3.52E+00	1.31E+00	3.33E+00	1.37E+00
THC-CH4	8.73E-01	1.51E+03	4.38E+00	6.45E+01	1.52E+00	1.61E+00
CH4	1.35E+00	2.11E+00	1.63E+00	1.72E-01	1.62E+00	1.11E+00
OZONE	6.94E-06	1.02E-01	3.83E-02	3.47E-02	9.61E-03	1.07E+01
SOLAR RAD	1.00E-06	9.45E-02	2.12E-02	2.85E-02	8.98E-04	5.56E+01
TEMP	12	31	20	6		
HUMIDITY	0	202	39	36	5	29
BAROMETER	993	997	995	1	995	1
WIND SPEED	0	28	6	7	0	47

WELLAND #11

DATE: MAY 25 1978
SCAN TIME: 90 SEC
AVERAGING TIME: 30 MIN
LOCATION: S.E. of B.F.GOODRICH(06488-47671):0.28KM & 160DGS/SOURCE

TIME	THC SOLAR RAD WIND SPEED	THC-CH4 TEMP WIND DIRECTION	CH4 HUMIDITY	OZONE BAROMETER
14:18-----14:48	2.7E+00 8.5E-02 7	1.2E+00 35 343	1.6E+00 0	8.6E-02 997
14:24-----14:54	2.7E+00 8.4E-02 7	1.3E+00 35 338	1.6E+00 0	8.4E-02 997
14:30-----15:00	2.9E+00 8.3E-02 6	1.4E+00 36 333	1.6E+00 0	8.5E-02 997
14:36-----15:06	2.8E+00 8.1E-02 5	1.3E+00 37 322	1.6E+00 0	8.8E-02 997
14:42-----15:12	3.0E+00 7.8E-02 5	1.3E+00 37 329	1.6E+00 0	9.0E-02 997
14:48-----15:18	3.1E+00 7.2E-02 5	1.3E+00 37 336	1.6E+00 0	9.3E-02 996
14:54-----15:24	3.1E+00 6.2E-02 4	1.3E+00 36 352	1.7E+00 0	9.9E-02 996
15:00-----15:30	3.0E+00 4.9E-02 5	1.3E+00 36 351	1.7E+00 0	1.0E-01 996
15:06-----15:36	3.0E+00 3.6E-02 5	1.3E+00 35 350	1.7E+00 1	1.0E-01 996
15:12-----15:42	2.8E+00 2.4E-02 5	1.2E+00 35 334	1.7E+00 1	1.0E-01 996
15:18-----15:48	2.7E+00 1.6E-02 6	1.2E+00 35 319	1.7E+00 1	1.0E-01 996

STATISTICS

NUMBER OF READINGS 60

POLLUTANT	MINIMUM VALUE	MAXIMUM VALUE	ARITHMETIC MEAN	STANDARD DEVIATION	GEOMETRIC MEAN	GEOM. STD. DEV.	PTC
THC	2.37E+00	5.07E+00	2.83E+00	5.42E-01	2.79E+00	1.1[illegible]E+00	
THC-CH4	9.80E-01	2.69E+00	1.26E+00	3.73E-01	1.22E+00	1.2[illegible]E+00	
CH4	1.43E+00	1.84E+00	1.63E+00	6.57E-02	1.63E+00	1.0[illegible]E+00	
OZONE	5.84E-02	1.18E-01	9.35E-02	1.16E-02	3.27E-02	1.1[illegible]E+00	
SOLAR RAD	9.83E-03	8.72E-02	5.76E-02	3.16E-02	1.36E-02	2.[illegible]E+00	
TEMP	34	38	36	1			
HUMIDITY	0	20	0	3	0	3	
BAROMETER	996	997	997	0	397	1	
WIND SPEED	0	16	7	4	5	2	

WELLAND #12

DATE: MAY 25 1978
SCAN TIME: 90 SEC
AVERAGING TIME: 30 MIN
LOCATION: S.E. OF B.F.GOODRICH(06488-47671);0.28KM & 160DGS/SOURCE

TIME	SOLAR RAD WIND SPEED	TEMP WIND DIRECTION	HUMIDITY	BAROMETRIC
17:51----18:21	6.7E-03 5	34 321	0	996
18:06----18:36	6.5E-03 3	34 282	0	996
18:21----18:51	6.3E-03 6	33 237	0	995
18:36----19:06	7.8E-03 6	31 225	0	996
18:51----19:21	1.3E-02 3	29 221	0	996
19:06----19:36	1.5E-02 2	28 208	0	996
19:21----19:51	1.2E-02 2	27 197	0	996
19:36----20:06	8.0E-03 2	25 194	0	996
19:51----20:21	4.6E-03 3	24 214	0	996
20:06----20:36	1.8E-03 3	24 227	0	996
20:21----20:51	4.7E-04 2	22 227	0	996
20:36----21:06	1.1E-04 2	21 221	0	997
20:51----21:21	3.2E-06 2	19 219	0	997
21:06----21:36	1.0E-06 3	18 213	12	997
21:21----21:51	1.0E-06 3	17 210	21	997
21:36----22:06	1.0E-06 2	17 219	20	997

TIME	SOLAR RAD WIND SPEED	TEMP WIND DIRECTION	HUMIDITY	BAROMETER
21:51----22:21	1.0E-06 2	16 222	33	997
22:06----22:36	1.0E-06 2	16 213	39	997
22:21----22:51	1.0E-06 1	15 206	45	998
22:36----23:06	1.0E-06 1	15 201	48	998
22:51----23:21	1.0E-06 1	14 198	50	998
23:06----23:36	1.0E-06 1	14 190	53	998
23:21----23:51	1.0E-06 1	14 204	55	998
23:36----00:06	1.0E-06 1	13 214	55	998
23:51----00:21	1.0E-06 1	13 212	55	998
00:06----00:36	1.1E-06 1	13 223	56	998
00:21----00:51	1.1E-06 1	12 140	63	998
00:36----01:06	1.8E-06 2	12 127	77	998
00:51----01:21	2.6E-06 2	11 129	87	999
01:06----01:36	2.8E-06 1	11 132	88	999
01:21----01:51	3.3E-06 0	12 152	87	999
01:36----02:06	3.0E-06 1	12 172	85	999
01:51----02:21	3.3E-06 1	12 166	88	999
02:06----02:36	5.3E-06 0	12 150	90	999
02:21----02:51	6.1E-06 0	11 138	89	999

TIME	SOLAR RAD WIND SPEED	TEMP WIND DIRECTION	HUMIDITY	BAROMETER
02:36-----03:06	8.6E-06 0	11 137	91	999
02:51-----03:21	8.2E-06 0	11 38	91	999
03:06-----03:36	4.7E-06 0	11 51	88	999
03:21-----03:51	9.4E-06 1	11 291	87	999
03:36-----04:06	1.1E-05 1	11 278	90	999
03:51-----04:21	9.9E-06 0	11 244	92	999
04:06-----04:36	9.0E-06 0	11 241	90	999
04:21-----04:51	6.8E-06 0	11 239	89	999
04:36-----05:06	1.2E-05 0	10 263	92	1000
04:51-----05:21	1.1E-05 0	10 261	91	1000
05:06-----05:36	5.0E-05 0	10 262	89	1000
05:21-----05:51	2.8E-04 0	10 39	91	1000
05:36-----06:06	1.1E-03 0	10 110	94	1000
05:51-----06:21	2.9E-03 0	10 122	97	1000
06:06-----06:36	4.8E-03 0	11 328	98	1000
06:21-----06:51	6.7E-03 0	11 346	95	1000
06:36-----07:06	1.0E-02 0	12 347	87	1000
06:51-----07:21	1.4E-02 0	13 213	73	1001
07:06-----07:36	1.8E-02 0	15 211	59	1001

WELLAND #12, CONT'D

TIME	SOLAR RAD WIND SPEED	TEMP WIND DIRECTION	HUMIDITY	BAROMETER
07:21-----07:51	2.2E-02 0	17 220	44	1001
07:36-----08:06	2.5E-02 1	19 221	31	1001
07:51-----08:21	2.8E-02 2	20 227	19	1001
08:06-----08:36	3.3E-02 2	22 236	8	1001
08:21-----08:51	3.7E-02 2	23 237	1	1001
08:36-----09:06	4.2E-02 2	25 239	0	1001

STATISTICS

NUMBER OF READINGS 618

POLLUTANT	MINIMUM VALUE	MAXIMUM VALUE	ARITHMETIC MEAN	STANDARD DEVIATION	GEOMETRIC MEAN	GEOMETRI STD. DEV
SOLAR RAD	1.00E-06	4.88E-02	6.33E-03	1.15E-02	4.09E-05	6.67E+0
TEMP	10	35	17	7		
HUMIDITY	0	102	50	38	10	20
BAROMETER	996	1001	998	2	998	1
WIND SPEED	0	11	1	2	0	4